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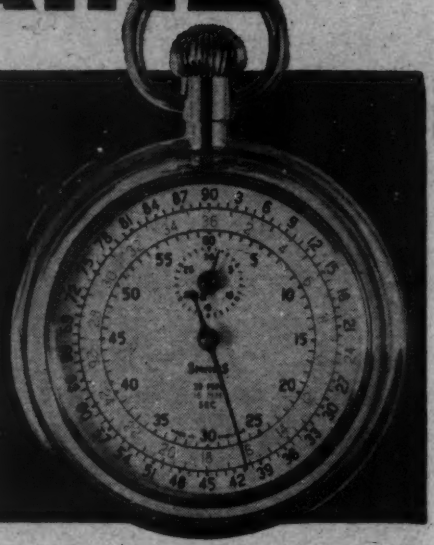

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 16 1961

VENOUS TONE*

BY

E. P. SHARPEY-SCHAFER, F.R.C.P.

Professor of Medicine, St. Thomas's Hospital Medical School, London

It is not a new idea that the peripheral venous system can constrict or dilate. The behaviour of the central venous pressure after haemorrhage, in heart failure, or in severe anaemia has long suggested that there are changes in peripheral venous tone and hence in the relative distribution of blood in the venous system. Thus rapid and conspicuous changes in central venous pressure may be observed without any change in circulating blood volume. Strong indirect evidence is provided by consideration of the responses of circulations with and without circulatory reflexes (Sharpey-Schafer, 1956; Sharpey-Schafer and Taylor, 1960). When the reflex pathway is interrupted the circulation behaves mechanically, and mean arterial pressure bears a direct relationship to the arterial pulse pressure and to the stroke output of the heart. It is the time difference between the normal, acting reflexly, and the mechanical, without reflexes, which indicates that in the former the veins, as well as the arteries, must be involved. Thus at the end of the Valsalva manœuvre control pulse pressure is not regained for about 15 seconds in a mechanical circulation; but in the normal, pulse pressure is greater than the control level within five seconds. Similar time differences in stroke output and pulse pressure can be seen in continuous arterial records during other procedures. Graphs of tipping into the erect posture, squatting, or hyperventilation cannot be fully interpreted on the view that arterial constriction or dilatation alone occurs. If, however, it is assumed that the venous system is also responding reflexly, then a fuller analysis is possible.

In the past the main difficulty has been to find methods for the study of peripheral venous tone. Many will be familiar with pressure measurements made in an "isolated" venous segment; but experience with this method over a decade suggests that the results are often more convincing to those who have not used it than to those who have. Modifications of this procedure are better, but are still exposed to serious artifacts.

A method to be described has many advantages in that frequent measurements can be made over short time intervals, and the effect of circulating substances as well as nervous impulses can be studied. In any such investigation there are clear advantages in finding procedures which will dissociate the behaviour of arteries and veins, so that one dilates while the other constricts. No reflex mechanism has yet been found which will do this, but certain circulating substances will.

*Based on the Oliver-Sharpey Lectures of the Royal College of Physicians of London, 1961.

Isolated Venous Systems

The principle of this method is to measure the pressure in a segment of vein or a system of veins which is isolated from the rest of the circulation. The blood is stationary in these veins, and the only connexion with the rest of the body is through the nervous system. In theory, a rise of pressure indicates venous constriction and a fall of pressure indicates dilatation. In practice, suitable segments of forearm vein occur only in a few individuals. The manometer sensitivity has to be great—about 1 cm. deflection for 1 to 3 mm. Hg. Artifacts are correspondingly increased, and body movement or muscle contraction can be very troublesome. Perhaps the most serious defect is that it is difficult to be certain that small radicals are not entering the inferior aspect of the segment. From a large number of experiments a few satisfactory records have been obtained, and constriction of a venous segment has been demonstrated during the Valsalva manœuvre and on tipping into the erect posture.

A somewhat less difficult modification consists in measuring the pressure simultaneously in the brachial artery and in a large antecubital vein, although high manometer sensitivity is still needed and the consequent artifacts still operate. The limb is cut off from the rest of the circulation by inflating a cuff on the upper arm to a high pressure. After about two minutes the arterial and venous pressures reach a nearly steady level (usually about 20 mm. Hg). A period of 5 to 10 minutes then follows during which experiments can be performed. Eventually the vasomotor nerves become paralysed by the high-pressure cuff. This last effect is often useful, as it is possible to repeat a given manœuvre under nerve-block conditions and thus distinguish artifacts from reflex constriction.

It is a simple matter to show that a rise of pressure occurs in both the arterial and the venous isolated systems after about six seconds' blowing during the Valsalva manœuvre. About 100 experiments of this type have been recorded. The reflex constriction of the arteries previously shown by plethysmography is clearly demonstrated. But it might be argued that if the arteries and veins are still in communication, then the rise of venous pressure might be a passive effect resulting from constriction of the arteries. It can be shown, however, that this is not the case. It is possible to arrange that the pressure in the veins is higher than in the arteries, and yet the same effect is produced. In this experiment two cuffs are placed on the upper arm; by inflating one of these, blood is first collected in the venous system so that the pressure rises to 40 to 50 mm. Hg. The high-

pressure occluding cuff is then thrown on. With the blood stationary, arterial pressure declines at first rapidly, then more slowly. Venous pressure also falls, for the arterioles are dilating progressively with the ischaemia. (It is shown below that the veins do not dilate from ischaemia.) In most subjects the pressure in arteries and veins is about equal by the time that the experiment can be done. But in a few subjects, probably owing to the arrangement of venous valves, a time may be chosen when the pressure is higher in the veins than in the arteries. A rise of pressure in artery and vein now indicates constriction of both sets of vessels.

The main value of these methods lies in giving a continuous record of the precise time period of changes in arterial and venous tone. Thus an elegant example may be recorded in " long cycle " (60 seconds) Cheyne–Stokes respiration. The constriction of both arteries and veins during hyperpnoea and the dilatation during apnoea proceed as smooth curves until they cease, when the vasomotor nerves become paralysed; incidentally proving that these changes in peripheral vasomotor tone are mediated by the nervous system and not by local changes in arterial gas tensions.

Venous Pressure Increment Per Unit of Inflow

This method depends on the simultaneous measurement of the rate of volume increase and the rate of venous pressure rise while blood is collecting in a forearm. The arrangement is the usual one for plethysmography, with a high-pressure cuff below cutting off the blood-flow to the hand and an upper-arm cuff for applying a collecting pressure. A small needle attached to a capacitance manometer records the pressure in the largest available antecubital vein. If, in fact, the forearm veins are capable of altering their tone, then one would expect that constriction would cause a greater pressure rise per unit inflow and dilatation a lesser.

While blood is collecting in a forearm the volume and the pressure increases describe complex curves, both of which are linear in most subjects over the range used for the measurement of forearm flow. A sigmoid type of pressure curve is not seen if the arm is at heart level, but can be demonstrated if the arm is held vertically above the head and the veins are virtually empty. Under the latter conditions there is an initial flat part to the curve, which then rises more steeply. With the arm at heart level, inflating the collecting-cuff squeezes sufficient blood into the distal forearm veins to increase their pressure to the steeper part of the curve. The measurements are therefore made in the range of 5 to 20 mm. Hg.

A change in venous pressure increment per unit of inflow might be due to alterations in the pressure of surrounding structures rather than to a change in the tone of the venous wall. There is evidence to show that this is not the case. Firstly, in any forearm it is possible to alter the flow through a wide range without altering the venous pressure increment ratio. Short periods of total ischaemia (two minutes) produce, during the subsequent hyperaemia, great changes in flow without any change in the pressure–flow ratio. These results also demonstrate that while short periods of ischaemia dilate the arteries (Lewis and Grant, 1925) the veins are unaffected. Secondly, reflex mechanisms which are known to cause constriction or dilatation of arteries alter the venous pressure–flow ratio in a manner which is abolished when the reflex pathway is interrupted. Thirdly, it is shown below that circulating substances affect the arteries first, producing considerable changes in flow, and only after an appreciable period arrive at the veins to alter the pressure–flow ratio.

The artifacts of the method bear some resemblance to the well-known artifacts of plethysmography. Thus an initial rapid cuff artifact is common on the pressure curve and may reach formidable proportions if a wide collecting-cuff is used on a fat tapering upper arm. It may be abolished or reduced by using a narrow cuff. In a few subjects, either the volume or the pressure increase or both are non-linear, the volume curve being convex to the left usually, and the pressure curve convex to the right (recording is, of course, from left to right). The pressure increase is most likely to be non-linear if the recording vein is small. Occasionally, too, sudden jumps of pressure may occur in small veins. No calculations can be made from such records.

The results are calculated from the slopes of the venous pressure and forearm volume curves and expressed as $\frac{\Delta P}{\Delta t} \Big/ \frac{\Delta V}{\Delta t}$ in arbitrary units of millimetres of mercury per millilitre. Nomenclature has been found to be troublesome. Electrical analogies are not entirely suitable, and terms like " incremental elastance " have been abandoned. It seems better, for the present, to define this ratio as " venous tone " of the forearm. The method has been used to study some 200 subjects.

Reflex Changes in Venous Tone

Posture.—The constriction which has been demonstrated in the arteries on tipping into the erect posture (Brigden *et al.*, 1950) also occurred in the veins (Fig. 1). In both sets of vessels the onset of constriction, mediated through the baroceptors, was seen to occur after five to six seconds. On tipping back, dilatation occurred more rapidly, often with an " undershoot." These effects were absent in circulations with the reflex system interrupted. In the normal the maximum decrease in arterial pulse pressure on tipping upright is at five

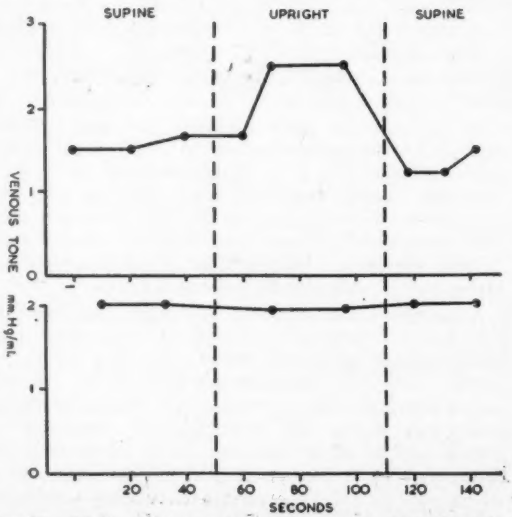

FIG. 1.—Effect of posture on venous tone. Upper graph: normal subject, showing constriction in the erect posture. Lower graph: subject without circulatory reflexes (tabetic), showing no change of tone with alteration of posture.

seconds; thereafter an increase in pulse pressure reflects the constriction of the peripheral venous system, with consequent increase in stroke output.

Valsalva Manœuvre.—This procedure is a more violent method of reducing the filling pressure of the heart. As expected, constriction of the venous system was easily demonstrated in 50 normal subjects (Fig. 2). It can now be seen that the conspicuous "overshoot" in arterial mean and pulse pressures after the Valsalva manœuvre is due to constriction not only of the arteries but also of the veins, thus increasing the stroke output for a number of beats. Changes in venous tone did not occur in subjects with interrupted circulatory reflexes.

Venesection.—Measurements on blood donors venesected 450 ml. showed little change in venous tone; but on increasing the amount of blood removed constriction was demonstrable (Fig. 3). With these large venesections it was noticeable that the skin became pale at about the same time that the veins constricted. These results show that haemorrhage is not just a question of simple reduction of blood volume, nor indeed is estimation of blood volume by itself of much value. Reflex venoconstriction tends to maintain the filling pressure of the heart, and probably explains the well-known discrepancies which often arise between the amount of blood lost and the beneficial effect of a smaller blood transfusion.

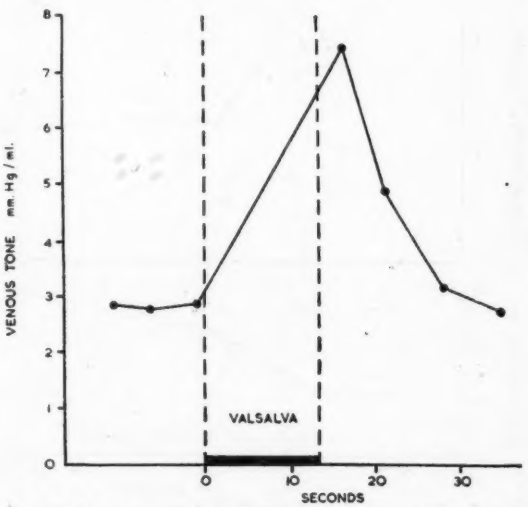

FIG. 2.—Venous constriction with the Valsalva manœuvre in a normal subject.

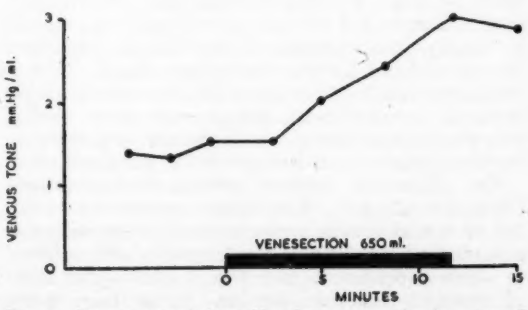

FIG. 3.—Venous constriction with a large venesection in a normal subject.

Coughing.—It has been shown that cough transients imposed on the circulation cause reflex arterial vasodilatation (Sharpey-Schafer, 1953a), and it can now be shown that the venous system also dilates (Fig. 4). Previously, the low pulse and mean arterial pressures which follow a few large cough transients, and which can be of a sufficient order to cause syncope, were explained by reflex arterial dilatation together with some diminution in cardiac output due to the raised intrathoracic pressure which persists for many seconds after coughing has ceased (Sharpey-Schafer, 1953b). This raised intrathoracic pressure, however, is only of the

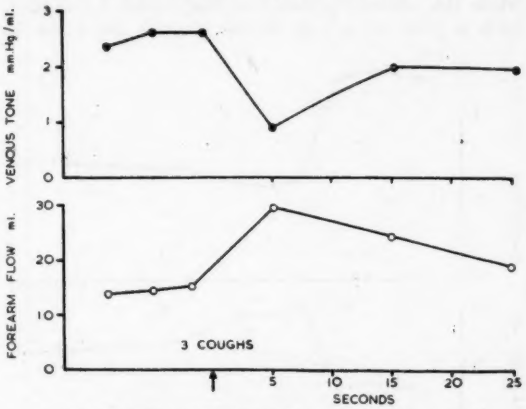

FIG. 4.—Dilatation of both arteries and veins after coughing.

order of 10 mm. Hg, and it always presented some difficulty that positive-pressure breathing at this level could reduce stroke output to the degree seen in continuous arterial records. Now that the additional factor of reflex dilatation of the veins has been demonstrated, the great reduction in stroke output can be satisfactorily explained.

Ganglionic Blocking Agents

Figs. 5 and 6 show the effect of intravenous tetraethylammonium bromide (T.E.A.B.). There is dilatation of forearm veins, indicating that resting tone, which can be released by blocking the reflex pathway, is present in normal peripheral veins.

It is known that, with the subject strictly supine, mean arterial pressure may fall very little after the intravenous

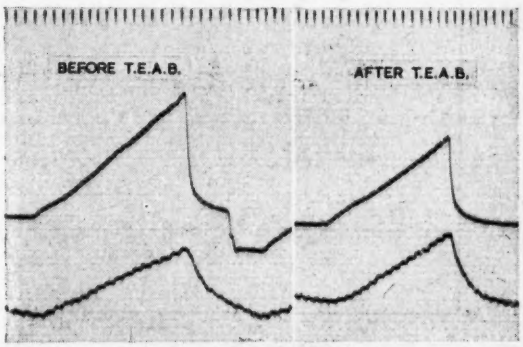

FIG. 5.—Upper trace: venous pressure. Lower trace: forearm volume. Time marker in seconds. Left-hand record is the control measurement; right-hand record after 200 mg. tetraethylammonium bromide intravenously. The rate of pressure rise compared with rate of volume increase is less after T.E.A.B., indicating venodilatation.

injection of ganglionic blocking agents. On the other hand, tipping into the erect posture will cause arterial pressure to fall to the lowest levels. The problem now is to determine how far the hypotension is due to venous as opposed to arterial factors. In a circulation without reflexes mean arterial pressure bears an approximately linear relationship to the stroke output of the heart, and since it is the veins which govern the latter it would appear that they, and not the arteries, are the major factor. It is also known that in patients with long-standing interruption of circulatory reflexes postural decrease of arterial pressure is slight. This is true both when the afferent pathway is interrupted by diseases such as tabes dorsalis or diabetic neuritis and when the efferent pathway is chronically blocked, as in long-standing drug treatment of hypertension.

A small number of measurements have shown that in such patients venous tone has returned to normal levels from the subnormal level induced by acute interruption of the reflex system. Reflex responses in the veins, however, are still absent. It would appear, therefore, that there are slow mechanisms, taking weeks or months to operate, which under conditions of blocking may restore normal venous tone. In clinical terms, such a mechanism would explain "recovery" from acute postural hypotension due to disease of the nervous system and the "loss of sensitivity" to adequate doses of hypotensive agents in the treatment of hypertension. It is clear that the usual clinical practice of following such cases by the measurement of arterial pressure by the antiquated cuff method can only be of limited value.

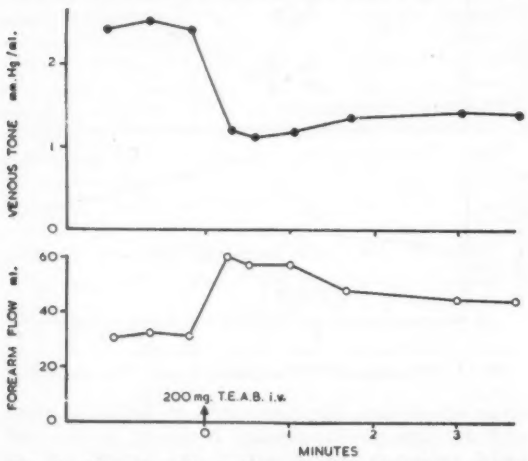

FIG. 6.—Normal supine subject, showing dilatation of both arteries and veins after 200 mg. T.E.A.B. intravenously.

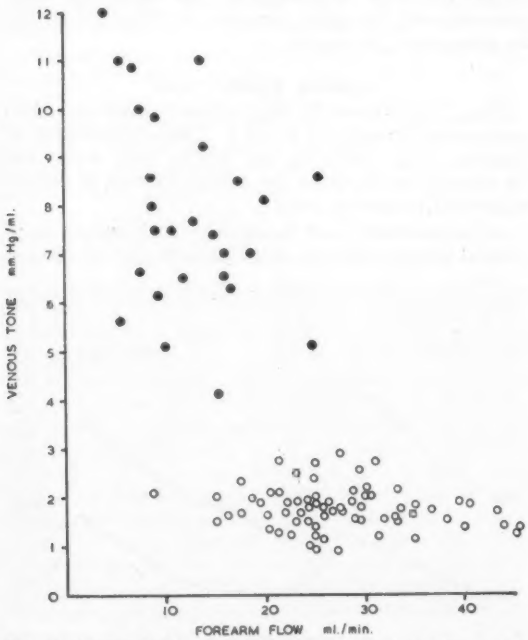

FIG. 7.—Venous tone plotted against total forearm flow. Clear circles—normal subjects; black circles—patients with heart failure. The normal limits lie between 1 and 3 mm. Hg pressure rise per ml. inflow. The cases of heart failure show venoconstriction

Venous Tone in Heart Failure

It was not originally expected that the method used would give case-to-case information about venous tone as well as changes occurring in any one individual. However, when some 80 normal subjects had been studied, the arbitrary index for resting venous tone in the forearm was seen to lie between 1 and 3 mm. Hg/ml. In all cases of heart failure studied, venous tone was increased (Fig. 7). These were patients with hypertensive, ischaemic, and valvular heart disease who showed a "square-wave" response to the Valsalva manœuvre (Sharpey-Schafer, 1955). The highest degree of venoconstriction was found in severe left heart failure. Some cases of valvular heart disease with great cardiac enlargement and tricuspid incompetence showed only a moderate degree of constriction in the peripheral veins.

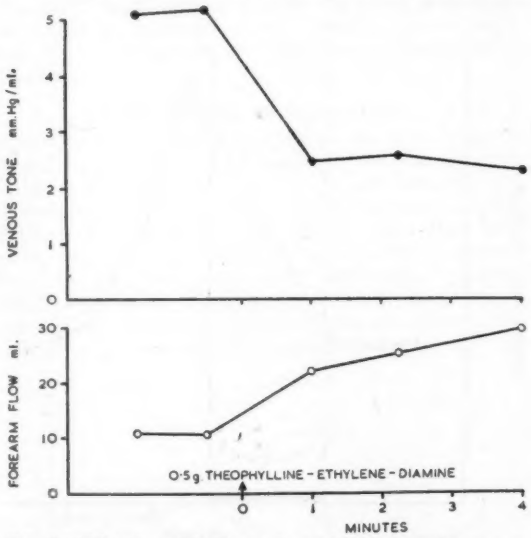

FIG. 8.—Dilatation of both arteries and veins after intravenous theophylline-ethylene-diamine in a patient with hypertensive heart failure.

The effects of standard clinical treatment were followed in 12 cases. With clinical improvement and a fall of central venous pressure, venous tone decreased towards the normal range. Similar results were obtained in acute experiments, and Fig. 8 shows the effect of theophylline-ethylene-diamine. It has been shown previously that theophylline causes a sharp fall in central

venous pressure as its initial action (Howarth *et al.*, 1947). This is now seen to be due to the effect on the peripheral veins. Intra-arterial theophylline has not yet been given to determine whether or not the venodilatation is a local action.

The high degree of constriction of peripheral veins in heart failure is difficult to explain by arterial baroceptor mechanisms alone. There is evidence that there is another reflex mechanism from the low-pressure system (auricle or pulmonary veins) on the left side of the heart. Thus in aortic incompetence the great arterial pulse pressure is largely derived mechanically and alters very little as severe heart failure develops, although conspicuous constriction of peripheral veins can be measured. Again, when the central venous pressure of normal subjects is raised by large rapid transfusions, constriction of the peripheral vessels occurs in spite of an increase in arterial pulse pressure. It is the rise of pressure in the left auricle which is the factor common to all these conditions.

Severe Anaemia

Forearm flow is normal or somewhat increased in anaemia. The arterial system therefore tends to be dilated. Fig. 9, however, shows that the venous system

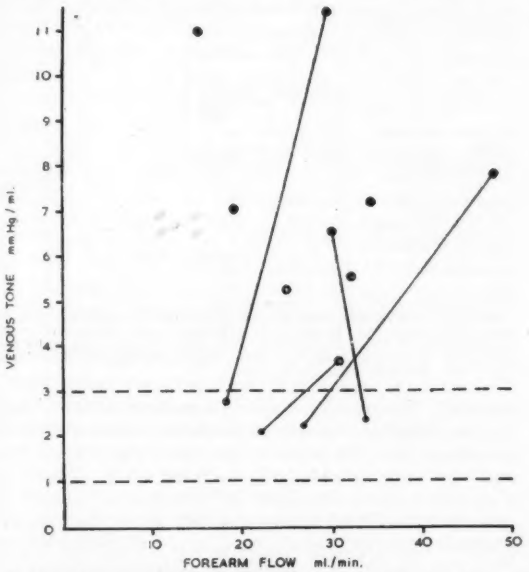

FIG. 9.—Severe anaemia. Venous tone plotted against forearm flow. The solid lines represent the effect of restoring Hb to normal levels. The horizontal dotted lines represent the normal limits (see Fig. 7).

is constricted. When venous tone is plotted against haemoglobin concentration (Fig. 10) it will be seen that the critical level is 40%, and below this figure venoconstriction becomes progressively greater as the haemoglobin falls. The graph bears a striking similarity to that found when cardiac output is plotted against haemoglobin (Sharpey-Schafer, 1944). Indeed, it is probable that venoconstriction is primary and in large part resonsible for the increase in cardiac output. As might be expected, there is a relationship between peripheral venous tone and the height of the central venous pressure (Fig. 11). Many would agree, too, that conspicuous pallor of the skin is best seen below 40% Hb. Since it is venous as opposed to "capillary" or arterial vessels which probably govern the colour of the skin, it is likely that pallor results more from constriction than from any reduction in local haemoglobin concentration.

Beriberi

Two patients with severe beriberi "heart failure" have been investigated. The data from one of these are shown in Fig. 12. This patient was a young alcoholic who clinically, biochemically, and in the response to treatment had classical severe beriberi. On admission,

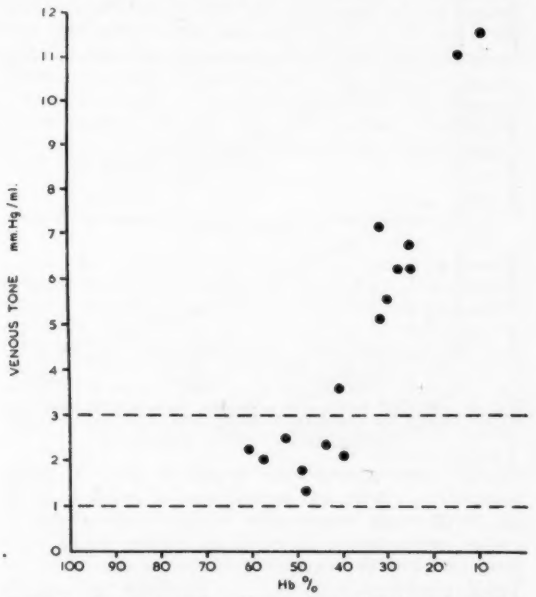

FIG. 10.—Severe anaemia. Venous tone plotted against Hb%. 40% is the critical level of haemoglobin for venoconstriction.

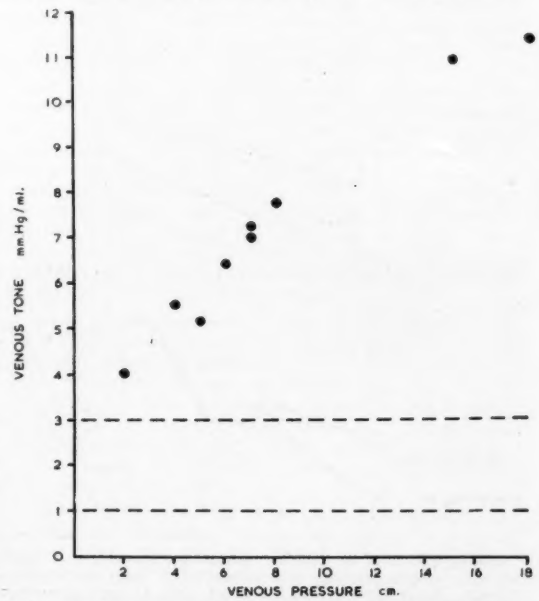

FIG. 11.—Severe anaemia. Relationship between venous tone and central venous pressure.

with a minute output of 15 litres per minute, there was formidable vasodilatation of peripheral arteries—in terms of forearm blood-flow, about seven times the normal value. At the same time the veins were constricted. The skin was pale and hot, although on

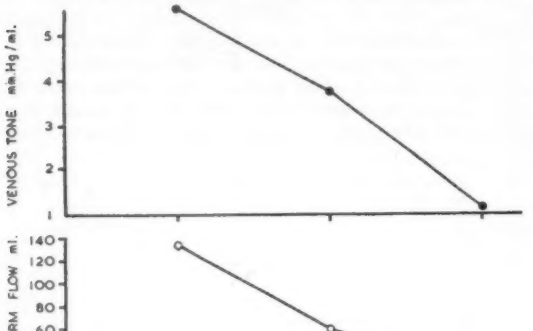

FIG. 12.—Beriberi heart. On admission there is great dilatation of the arteries but constriction of the veins (see text). Venous pressure = central venous pressure.

recovery the patient was found to have a ruddy complexion. With the central venous pressure raised to 25 cm. and considerable cardiac enlargement, a clinical diagnosis of severe heart failure would have been accepted by anyone. However, a record of the Valsalva manœuvre showed that the heart was capable not only of reducing its stroke volume when the high filling pressure was reduced but of increasing it during the "overshoot," as in the normal subject. In this case the plasma volume change was represented by a rise of 24% Hb on recovery. Thus the high filling pressure driving the heart would appear to be derived from peripheral venoconstriction in the presence of an increase in blood volume.

Perhaps the main interest of the data in severe anaemia and in beriberi lies in the dissociation of effects on the arterial and venous systems. Since arterial pulse-pressure is increased, dilatation of both arteries and veins would be expected if reflex influences alone operated. Venous constriction in these conditions, therefore, is more likely to result from humoral mechanisms, but their nature is at present unknown.

Effect of Humoral Agents on Venous Tone

The effects on the venous system of a number of circulating substances have been studied. The results are summarized in the Table and will be published

Table Showing Effect of Humoral Agents on Venous Tone

Substance	Dose	Route	Effect on Forearm	
			Veins	Arteries
L-Adrenaline hydrogen tartrate	25 μg. single shot	I.V.	Constriction	Dilatation
" "	2 μg./min.	I.A.	"	Dilatation followed by constriction
" "	2 μg./min.	I.V., hand veins	"	Nil
L-Noradrenaline bitartrate	0·5 μg./min.	I.A.	"	Constriction
5-Hydroxytryptamine creatine sulphate	10 μg./min.	I.A.	"	Dilatation followed by constriction
Histamine hydrogen phosphate	2 μg./min.	I.A.	"	Dilatation
D-L-Isopropylnoradrenaline hydrochloride	0·1 μg./min.	I.A.	Sl. dilatation	"
Amyl nitrite	Inhaled		Dilatation	"
Sodium nitrite	5 mg./min.	I.A.	"	"

I.V. = Intravenous. I.A. = Intra-arterial.
The effects of these substances on the arterial system are established thus:—Adrenaline: Grant and Pearson, 1938; Holling, 1939; Allen *et al.*, 1946. Noradrenaline: Barcroft and Konzett, 1949. 5-Hydroxytryptamine: Roddie *et al.*, 1955. Histamine: Duff *et al.*, 1953. Isopropylnoradrenaline: Cobbold *et al.*, 1960. Nitrites: Wilkins *et al.*, 1937.

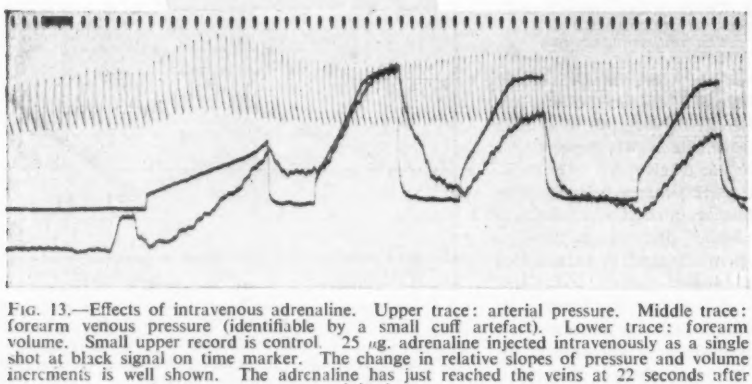

FIG. 13.—Effects of intravenous adrenaline. Upper trace: arterial pressure. Middle trace: forearm venous pressure (identifiable by a small cuff artefact). Lower trace: forearm volume. Small upper record is control. 25 μg. adrenaline injected intravenously as a single shot at black signal on time marker. The change in relative slopes of pressure and volume increments is well shown. The adrenaline has just reached the veins at 22 seconds after injection.

elsewhere (Sharpey-Schafer and Ginsburg, 1961). They provide valuable evidence on the method, for substances introduced into the blood-stream reach the arteries first and only some seconds later reach the veins. Thus it is a simple matter to demonstrate conspicuous changes in forearm blood-flow before any change in the venous-pressure increment ratio occurs, as is well shown by the effects of intravenous adrenaline (Fig. 13).

Three routes of administration are available: intravenous, where the substance passes through the heart and the lungs, and where reflex effects may operate; intra-arterial, where the dose is about 1/50 the intravenous dose and only local effects need to be considered; and local intravenous, where the substance is run into a vein on the back of the hand and reaches part of the venous system being investigated without passing through the arteries or the tissues.

The results have shown that adrenaline, noradrenaline, 5-hydroxytryptamine, and histamine are powerful venoconstrictors; while nitrites and isopropylnoradrenaline dilate the venous system (see Table).

Several substances, such as adrenaline and histamine, have a dissociated action on arteries and veins, dilating the former and constricting the latter.

Summary

A method is described for measuring changes in tone of forearm veins. The rate of venous pressure rise and volume increase in a segment of forearm were recorded simultaneously when a proximal collecting-cuff was inflated. The results were expressed as $\frac{\Delta P}{\Delta t} / \frac{\Delta V}{\Delta t}$ in arbitrary units of mm. Hg pressure per ml. inflow, and defined as "venous tone" of the forearm; an increase in this ratio indicating constriction and a decrease indicating dilatation. The errors of the method and those of confirmatory methods, such as pressure changes in isolated venous systems, are discussed.

Reflex constriction of the normal peripheral venous system occurred on tipping into the erect posture, with the Valsalva manœuvre, and with large venesections. Reflex venodilatation followed large cough transients. These effects were abolished when the reflex pathway was interrupted. Venodilatation followed the administration of intravenous ganglionic blocking agents, indicating that there is some resting tone in forearm veins.

In heart failure, venous tone was increased, often conspicuously, and fell towards the normal level (1–3 mm. Hg/ml.) on treatment. In severe anaemia, venous tone was also increased though the arteries were moderately dilated; the critical level of haemoglobin was 40%, and the plot of venous tone increase against haemoglobin decrease bore a resemblance to the plot of cardiac output against haemoglobin. In severe beriberi the venous system was constricted in spite of maximal dilatation of the arteries.

Adrenaline, noradrenaline, 5-hydroxytryptamine, and histamine were powerful venoconstrictors. Nitrites dilated the venous system, as did isopropylnoradrenaline.

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THE DANGEROUS VAGINAL PESSARY

BY

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Since January, 1957, 13 patients have been admitted to the Royal Victoria Infirmary with serious pelvic complications associated with the prolonged use of vaginal ring or cup-and-stem pessaries. There have been six cases of primary cancer of the vagina, five of severe chronic ulceration of the vaginal walls, and one case of vaginitis complicated by fulminating pelvic cellulitis, and in one patient a pessary had ulcerated into the bladder and rectum, causing large fistulae; this patient died. Brief case histories are given.

Case Reports

Case 1.—A 55-year-old patient was admitted to the gynaecological ward in January, 1957, with a history of slight irregular vaginal bleeding since the menopause two years previously. During the six weeks prior to admission the blood loss had been continuous. For nine years she had suffered from prolapse, and during this time had worn a vaginal ring pessary which had seldom been changed. On examination she was found to have a crescent-shaped primary cancer of the vagina involving the posterior fornix and the right wall of the vagina. The growth followed exactly the line of contact between the pessary and the vaginal wall.

Case 2.—A 74-year-old widow was admitted to the gynaecological ward in July, 1958, for investigation of post-menopausal vaginal haemorrhage. She had worn a ring pessary for prolapse for over 40 years. She could not remember how often the pessary had been changed, but it had finally been removed by her general practitioner in March, 1958, because of vaginal discharge. On examination she was found to have a horseshoe-shaped cancer of the vagina involving the anterior and both lateral walls. The surrounding tissues were oedematous and infected.

Case 3.—A 66-year-old widow was admitted to the gynaecological ward in February, 1958, for investigation of post-menopausal bleeding. She had worn a ring pessary for prolapse since 1948. To begin with she had changed the pessary regularly, but since 1950 she had left it in the vagina for several months at a time. She periodically douched the vagina, and in January, 1958, noticed that the fluid was blood-stained. She consulted her doctor, who referred her to hospital. Pelvic examination revealed an ulcerating cancer of the vagina involving the posterior fornix and the right upper half of the right vaginal wall.

Case 4.—An 84-year-old woman was admitted to the gynaecological ward in July, 1958, for investigation of post-menopausal bleeding. For 10 years she had worn a ring pessary for prolapse. She had changed the pessary every two or three months but had finally removed it in May, 1958, when she noticed vaginal bleeding. Examination revealed an extensive cancer of the vagina involving the posterior fornix and extending round both lateral walls almost as far as the urethra.

Case 5.—A 75-year-old widow was admitted to the gynaecological department because of vaginal bleeding in October, 1958. For 20 years she had worn a ring pessary for prolapse, and it had been changed every two months by the district nurse. Examination under an anaesthetic revealed a crescent-shaped cancer involving the posterior fornix and right vaginal wall.

Case 6.—A 77-year-old widow was admitted to the gynaecological ward in May, 1961, with a two-months history of foul vaginal discharge and occasional slight bleeding. For 50 years she had worn a ring pessary to control a prolapse. She had changed the pessary regularly herself every month; it was last changed a fortnight before admission. On examination she was found to have a crescentic cancer of the upper vagina involving the posterior fornix and both lateral walls.

Case 7.—A 71-year-old widow was admitted to the gynaecological ward in August, 1959, for investigation of a purulent-smelling vaginal discharge. Nine months before admission she had been given a ring pessary to control a prolapse; the pessary had never been changed. Once the pessary had been removed she was found to have a circular ulcerating vaginitis involving the upper half of the vagina. Resistant *Staphylococcus aureus* was grown from the vaginal discharge.

Case 8.—A 61-year-old widow was admitted to the gynaecological department in September, 1960, for investigation of post-menopausal bleeding. For 17 years she had worn a ring pessary to control a prolapse. The pessary had been changed regularly at a local women's welfare clinic. A foul-smelling pessary was removed from the vagina, and examination showed a swollen oedematous and ulcerated posterior fornix and cervix. The clinical appearance suggested malignancy, but biopsy revealed only chronic infection.

Case 9.—An 88-year-old widow was admitted to the gynaecological department in August, 1960, after a brisk vaginal haemorrhage. Vaginal examination revealed a ring pessary which had not been changed for 30 years; the patient had quite forgotten that it was in the vagina. An ulcerating vaginitis involved the posterior and right vaginal fornices, and there was an offensive discharge. The condition was non-malignant.

Case 10.—A 68-year-old patient was admitted to the gynaecological department because of post-menopausal bleeding. She had suffered from pernicious anaemia for many years but was in good health. A ring pessary had been worn for 25 years on account of prolapse. She had changed the pessary every two months, but on the last two occasions had noticed blood on the pessary. A large infected ulcer was found in the posterior fornix extending half-way down the right wall of the vagina. Clinically this appeared to be malignant, but biopsy showed only chronic infection. This patient's family doctor did not know that she was wearing a pessary; it had been inserted originally by a general practitioner in another part of the country.

Case 11.—A 70-year-old patient (with moderately severe mitral stenosis) was admitted to a surgical ward in the hospital in March, 1957, with a strangulated femoral hernia. She was wearing a Napier cup-and-stem pessary and was noted to have a profuse vaginal discharge. The house-surgeon was unable to remove the pessary and sought the help of a gynaecologist; he too failed to remove the pessary. In the theatre, prior to the surgical operation, the patient was placed in the lithotomy position and examination showed a complete procidentia with the cup portion of the pessary firmly incarcerated in a huge oedematous and infected cervix. The pessary had to be cut out of the cervix. Convalescence was complicated by a severe staphylococcal infection of the vaginal vault. It was learned afterwards that the pessary had not been changed for nine months. Eight weeks after the emergency operation a huge procidentia was repaired by Le Fort's technique.

Case 12.—A 78-year-old widow was admitted to a surgical ward with acute lower abdominal pain in February, 1957. Because of an offensive vaginal discharge a gynaecological opinion was sought. Pelvic examination revealed a firm constriction half-way up the vagina—the area was ulcerated and infected and bled easily. A provisional diagnosis of cancer of the vagina was made. In the theatre, with the patient under general anaesthesia, examination showed a bone ring pessary embedded in the vaginal wall. The pessary had to be removed piecemeal with a bone forceps. The vaginal wall and surrounding cellular tissues were heavily infected, and a tender brawny swelling stretched out on either side from the cervix. The patient, in fact, had an acute pelvic cellulitis secondary to infection surrounding the vaginal pessary. She later admitted that she had quite forgotten about the pessary, and calculated that it must have been in position for at least 26 years.

Case 13.—A 77-year-old widow was admitted to the gynaecological ward in September, 1959. The day before admission she had sent for her general practitioner and had told him that she was having pain on micturition and was constipated. She told him—for the first time—that she was wearing a vaginal pessary which had been given to her by a nurse 18 years previously. The doctor made a vaginal examination and found a densely adherent old-fashioned "shelf" pessary. The vagina contained blood and a foul-smelling discharge. The patient's general condition was poor. The pessary had to be removed under anaesthesia in hospital. She was then found to have a vesico-vaginal fistula 7 by 2 cm. and a recto-vaginal fistula 3 by 2 cm. The openings into the bladder and rectum gradually decreased in size, and six weeks after admission a colostomy was performed in order to keep the vagina clean. An attempt was made to close the vesico-vaginal fistula in February, 1960, but the extent of the damage was too great and it was regarded as impracticable. The ureters were transplanted into an isolated loop of ileum by a genito-urinary surgeon in March, 1960, but the patient developed a right hydronephrosis and an acute pyelonephritis. She died in May, 1960.

In these cases the distribution of the vaginal cancer or ulcerating vaginitis followed closely the area of contact between pessary and vaginal wall. It is likely that long-standing trauma and infection contributed to the development of the lesions.

Discussion

The vaginal pessary is one of the oldest of all medical instruments, and no one knows when it was first used in the treatment of prolapse. Numerous patterns, designed in a variety of materials, were used quite widely in the eighteenth and nineteenth centuries. With better understanding of the anatomy of prolapse and with the development of modern surgical and anaesthetic techniques the use of the pessary has declined steadily in the last 50 years. Considering the serious complications that may arise it is doubtful whether there is now any place for vaginal pessaries in the management of prolapse. It is not uncommon for patients to forget that there is a pessary in the vagina, and this is especially liable to happen in the elderly (Pritchard, 1961). In Cases 10 and 13 the patients had moved from one area to another and had omitted to tell their new doctors that a pessary was being worn; neither thought it necessary to have medical supervision until ominous signs appeared. Most of the 13 women had changed their pessaries regularly and frequently, but this had not prevented the development of vaginal lesions. The continuing pressure of a foreign body is sufficient to set up a chronic irritation in the vaginal squamous epithelium. Whether this leads to infection or malignant change appears to be a matter of individual susceptibility.

Since January, 1957, there have been eight cases of primary cancer of the vagina in this clinic. Six of the eight women (Cases 1 to 6) had worn ring pessaries for many years, and the distribution of the cancer suggested that chronic irritation from the pessary was an important

aetiological factor. The seventh woman had a carcinoma superimposed on an excoriated, infected procidentia, but there was no apparent contributory factor in the eighth case. The numbers are small, but this experience does suggest that the vaginal ring pessary is an important preventable cause of cancer of the vagina.

With one exception there were no contraindications to surgical treatment in the 13 cases. In Case 11 the patient had a moderately severe mitral stenosis, but the emergency operation for relief of a strangulated hernia was undertaken without difficulty, and she subsequently had Le Fort's operation without complication. This case illustrates the usefulness of Le Fort's procedure in severe cases of prolapse when the patient, through age or some medical disability, is thought to be a poor surgical risk. When subsequent patency of the vagina is not important this simple procedure has a number of advantages over the Fothergill repair (Vartan, 1960; *Lancet*, 1961). The anaesthetic requirements are less, the operation can be done in a few minutes, and there is less disturbance of cellular tissue and bladder. The patient can be up and about in 24 hours, and, in my experience, convalescence is smoother and speedier than after a Fothergill-type operation. Many general practitioners have never heard of the operation, and a surprising number of gynaecologists have had no personal experience of it. The few patients on whom I have thought it necessary to perform this operation have been well pleased with the result and have been spared the misery and possible complications associated with prolonged wearing of a vaginal pessary.

Conclusions

Prolonged use of vaginal ring or cup-and-stem pessaries may lead to cancer of the vagina, ulcerative vaginitis, and fistulae. The clinical histories are given of 13 patients admitted to the Royal Victoria Infirmary since January, 1957.

In view of these important complications it is suggested that there is no place in modern gynaecological practice for vaginal pessaries in the management of prolapse.

For severe degrees of prolapse in elderly and infirm patients Le Fort's operation is preferable to the use of vaginal pessaries.

I am indebted to Mr. Frank Stabler for permission to publish details of patients admitted under his care (Cases 2, 8, 9, and 13).

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Plans for a dental health campaign are being discussed by the local authorities of Edinburgh, Midlothian, Peebles, East Lothian, West Lothian, Selkirk, Berwick, Fife, Kirkcaldy, and Dunfermline, in view of reports showing the damage caused by decay to children's teeth through sweets and lack of proper dental hygiene. The campaign will involve some 120,000 schoolchildren in the 5 to 11-plus age group. A further 70,000 between 12 and 17 will form a second priority. The programme of dental health education is, however, also to be aimed at parents, grandparents, and others who can influence the children. The campaign will last for over two months, and will call for brushing of the teeth last thing at night, mouth rinsing after snacks, the eating of fruit after meals, and regular visits to the dentist.

ROLE OF INTRATHECAL HYDROCORTISONE IN TUBERCULOUS MENINGITIS IN CHILDREN

BY

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The prognosis of tuberculous meningitis has changed greatly since the introduction of streptomycin and isoniazid. Even so, a large number of patients die of this disease and many of those who survive suffer from various sequelae. The dreaded complications of tuberculous meningitis are produced by deposition of thick fibrinous exudate, resulting in matting together of the leptomeninges, mainly at the base of the brain in the regions of the circle of Willis, the interpeduncular space, the sylvian fissure, and the optic chiasma. When this exudate undergoes fibrous organization it may compress various cranial nerves and the underlying nervous tissue, producing various types of paralysis, vascular occlusion with resultant infarction of the brain, and obstruction to the free flow of C.S.F.

The C.S.F. block may be at different levels: (1) blockage of various ventricular foramina, leading to internal hydrocephalus; (2) spinal subarachnoid block with obstruction near the foramen magnum—intracranial pressure is not necessarily increased though there will be diminished pressure of the spinal subarachnoid fluid; (3) arachnoid block, producing impairment of reabsorption of C.S.F. through arachnoid villi, with marked increase of intracranial pressure.

Various drugs have been used from time to time to prevent formation and organization of the exudate. Smith and Vollum (1950) first tried intrathecal P.P.D.: since then many other workers have used it, but with no good result. Moreover, the treatment is laborious, time-consuming, and hazardous. Streptokinase, streptodornase, heparin, and even trypsin intrathecally have been used by various workers with equally unpromising results. Kinsell (1951) first suggested the use of corticosteroid in the treatment of tuberculous meningitis as an adjuvant to antimicrobial drugs, and many favourable results have been published since then. Corticosteroid, either systemically or better still intrathecally, by its high antiphlogistic, antifibrinous, and antifibroblastic activity prevents or even removes exudate, allowing free flow of C.S.F. to each and every corner of the subarachnoid space, providing better diffusion of antituberculosis drugs, and reducing complications to a minimum.

So far only a few reports (Cocchi, 1956; Lorber, 1960; Godden, 1960) have been published showing the effect of intrathecal hydrocortisone. The idea of the present study is to show the relative efficacy of intrathecal hydrocortisone and to assess its systemic use in the treatment of tuberculous meningitis.

Materials and Method

The study was undertaken in the paediatric department of Calcutta Medical College, where children up to the age of 7 years are admitted. Altogether 43 unselected cases of tuberculous meningitis were studied

from July, 1959, to June, 1961. These cases had been proved to be tuberculous beyond reasonable doubt. Reliance was mainly on the following points: (*a*) Clinical manifestation of irregular fever, vomiting after food, anorexia, irritability, paralysis of varying degree, convulsions, unconsciousness, neck rigidity, positive Kernig's sign, pupillary change, stiffness of the body, increased deep jerks, extensor plantar response, and tense fontanelle where present. (*b*) C.S.F. findings, such as clear fluid with increased tension, high cell count (mostly lymphocytes), increased protein content, and low sugar and chloride content; tubercle bacilli were found in 47% of the cases. (*c*) Positive Mantoux reaction in 87% of the cases. (*d*) Presence of an associated tuberculous lesion in 60% of the cases.

In both the oral and the intrathecal groups the criteria of diagnosis were the same.

Classification of the cases was in accordance with that of the M.R.C. (1948): (1) Mild variety—the patients fully conscious, with only mild focal neurological signs and without any paralysis. They were not included in the study as the prognosis in this group with oral steroid is very satisfactory. (2) Moderate variety—with little disturbance of consciousness and with neurological signs such as paralysis of varying degree. (3) Severe variety—patients in coma with or without convulsions and with gross paralytic manifestations.

The patients fulfilled the following criteria: all of them had active meningitis; they were in the moderate or severe stage of the disease according to the M.R.C. (1948) classification; none had had anti-tuberculosis treatment before admission to hospital; none had previously had corticosteroid in any form; and all had received the same antimicrobial drugs.

Furthermore, the 43 patients under study were divided into two groups—the oral steroid group and the intrathecal steroid group. Alternate patients on admission were given oral or intrathecal steroid, except the last two, who were moribund and were given intrathecal steroid only. The statistical differences were ascribed to difference in treatment, as both the groups were very similar in every other respect.

Of the 43 cases, 20 had oral prednisolone in a daily dose of 10–20 mg. in three or four divided doses for three weeks; it was then gradually tailed off and completely stopped in another week's time. The remaining 23 received intrathecal hydrocortisone 12.5 to 25 mg. daily for six days and then on alternate days for another six injections, thus covering a total period of three weeks. All these patients had the same anti-tuberculosis treatment, such as streptomycin sulphate 40 mg./kg. body weight intramuscularly, and isoniazid 10–15 mg./kg. P.A.S. 250 mg./kg. was given in some cases. None received intrathecal streptomycin.

The C.S.F. was examined several times—once on admission, once after the third intrathecal injection of steroid, once after three weeks, and finally before discharge from the hospital (see Table I). In none was the C.S.F. cultured for acid-fast bacilli or sent for guinea-pig inoculation test.

Analysis and Discussion

Survival Rate.—There was a marked difference in survival rate in the two groups. In the oral steroid group nine cases were of moderate severity, with 5 (55.5%) survivals, and 11 were severe, with 3 (27%) survivals. In the intrathecal group three cases were of moderate severity and all survived, and 20 were severe with 11 (55%) survivals. Though the survival rate, especially in the oral steroid group, is somewhat lower than that of other workers, it is generally agreed that the survival rate is much lower in the lower age-group of patients (M.R.C., 1948; Cocchi, 1956; Voljavec and Corpe, 1960; Lorber, 1960), and 75% of our patients were under 3 years of age. Besides, most of them were admitted in a very low general condition and poor nutritional state, and their average duration of illness before admission into hospital was from three to four weeks. These additional factors accounted for the higher mortality rate in this series.

C.S.F. Pattern During Course of Treatment.—In the intrathecal steroid group the cell count after the third injection showed a reduction except in one patient who died and in whom the count was raised from 50 to 247 c.mm., and in two cases in which the count was more or less stationary. This low cell count at the second examination proved that repeated injections of hydrocortisone intrathecally did not produce any further septic or aseptic inflammation. After three weeks, when the next full examination was made there was in all cases (both oral and intrathecal groups) a diminution in cell count and protein content, with a rise in sugar and chloride. These changes were definitely more pronounced in the intrathecal group (Table I). The C.S.F. was again examined immediately before the patients were discharged from hospital and in some long-stay cases even earlier. The C.S.F. report was more or less normal within reasonable limits, but the protein content was higher than normal in quite a few cases (Table I). In the intrathecal group the cellular and biochemical cure was quicker than in the oral steroid group, the period of stay in hospital thus being reduced.

Period of Unconsciousness.—The period of unconsciousness was analysed in those who survived and went home with or without sequelae. In the oral steroid group the average duration of unconsciousness was 39.5 days, with a range of 22 to 60 days. In the intrathecal group unconsciousness lasted for 2 to 12 days, with an average of 10 days. One patient, however, remained unconscious for 40 days. He was unconscious for eight days before admission. It was also noticed that the longer the period of unconsciousness prior to admission the longer the delay in regaining consciousness. The

TABLE I.—*C.S.F. Pattern During Course of Treatment*

	Oral Steroid Group				Intrathecal Steroid Group			
	No. of Cells	Sugar (mg./100 ml.)	Chloride (mg./100 ml.)	Protein (mg./100 ml.)	No. of Cells	Sugar (mg./100 ml.)	Chloride (mg./100 ml.)	Protein (mg./100 ml.)
On admission	103 (12–180)	24 (12–38)	626 (580–680)	188 (100–330)	122 (40–320)	28 (12–42)	600 (530–650)	147 (100–380)
After third I.T. inj.	—	—	—	—	80 (20–150)	—	—	—
After 3 weeks	40 (24–80)	32 (24–40)	660 (630–700)	154 (100–210)	24 (10–48)	48 (34–55)	686 (638–720)	106 (60–120)
Before discharge	Normal	Normal	Normal	80 (60–110)*	Normal	Normal	Normal	70 (50–80)†

Figures in parentheses indicate the range of measurement. * In six cases. † In five cases.

period of unconsciousness was curtailed greatly in the intrathecal group. Oral feeding in these patients could be resorted to much earlier, with better maintenance of nutrition and quicker recovery. Also the complications of nasal feeding during unconsciousness were minimized and nursing-time was saved.

Period of Stay in Hospital.—Table II shows the period of stay in hospital in the two groups. Only those who survived their period of stay were included in the analysis. The stay was much less in the intrathecal group.

Sequelae.—Before the introduction of steroids in the treatment of tuberculous meningitis a large number of patients suffered from sequelae, particularly in the severe group. Now with the use of steroids, especially intrathecally, the sequelae have been greatly reduced. Table III shows the relative incidence of sequelae in the two groups of patients. In the intrathecal group there were no sequelae in patients with moderate severity, whereas 2 out of 11 severe cases had sequelae—one with

TABLE II:—*Period of Stay in Hospital*

Group	Mean	Range
Oral ..	3 months 21 days	1 month 25 days to 7 months 25 days
Intrathecal ..	2 ,, 3 ,,	1 ,, 2 ,, ,, 3 ,, 26 ,,

TABLE III.—*Incidence of Sequelae*

	Oral Steroid Group			Intrathecal Steroid Group		
	Total No.	No. Survived	No. with Sequelae	Total No.	No. Survived	No. with Sequelae
Moderate	9	5	2 (40%)	3	3	0
Severe ..	11	3	2 (66%)	20	11	2 (18%)

paralysis of all four limbs and the other with marked dimness of vision. The latter at one time could not see anything, but she gradually recovered some sight before her discharge after a month and 25 days. In the oral steroid group the percentage of sequelae was much higher. In the moderate variety two (40%) out of five patients that survived had sequelae—one had hemiplegia and one had paralysis of the right lower limb. In the severe variety 2 (66%) out of the 3 patients who survived had sequelae—one with hemiplegia and the other with monoplegia. Unfortunately the patients under study could not be kept long in the ward owing to severe overcrowding, nor could they be followed up for any length of time as their attendance in the out-patient department was very irregular.

Summary

Forty-three severe and moderately severe cases of tuberculous meningitis in children were studied in detail and the effects of oral and intrathecal corticosteroid were compared.

In those who received intrathecal hydrocortisone the survival rate was much higher, the disease ran a shorter course, the periods of unconsciousness and stay in the hospital were much less, the sequelae were minimal, and the biochemical cure (in C.S.F.) was earlier.

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LUNG CANCER AMONG WHITE SOUTH AFRICANS

REPORT ON A FURTHER STUDY

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In a previous paper (Dean, 1959) I reported that, while white South Africans had long been the heaviest smokers of packeted cigarettes in the world, British male immigrants to South Africa who died between the ages of 45 and 64 had a mortality rate from lung cancer 44% higher than South-African-born white men of the same age-groups. Moreover, this higher lung cancer mortality among British male immigrants occurred in each of the five major South African cities and in the other urban and rural areas of South Africa. The lung cancer rate of British male immigrants also exceeded the lung cancer rate of male immigrants from other countries. Further, in Durban the lung-cancer rate was high for both South-African-born men and for British immigrants.

On the basis of the national average levels of cigarette consumption, the higher lung cancer mortality rate of the British immigrants was clearly not to be attributed to greater consumption of cigarettes. Nevertheless, it was possible that these immigrants were a special group of heavy-smoking men ; therefore a further inquiry was carried out to ascertain, so far as was possible, the smoking habits of both the British immigrants and the men of South African birth who died of lung cancer and those of a matched control group.

Outline of Inquiry

In the previous inquiry the basic statistical information had been obtained from the death certificates of all the men and women who had died from lung cancer between 1947 and 1956, supplied by the Population Registrar in Pretoria. Since the previous study, lung cancer statistics have become available for 1957, 1958, and 1959. During these years the British immigrants continued to have a much higher lung cancer rate than the South-African-born and other immigrants. For the second part of the inquiry a "control" was required for each man who died from lung cancer during the years 1947–56 so that their smoking habits could be compared. The procedure adopted to obtain the controls was to select the first male in the Register of Deaths, following each male lung cancer death, who had died in the same

calendar year, who fell within the same five-year age-group, and who was in the same birthplace group and the same place of residence prior to death. In the case of small towns it was sometimes necessary to go to the next small town listed in the Register of Deaths in order to obtain the control. For the year 1953, which was the mid-year of the survey from the point of view of the number of deaths, two controls were selected for each lung cancer death in order to increase the number of controls. Copies were made of all the death certificates, which gave the home address of the decedents at the time of death. The next problem was to trace the families of these men.

Personal letters were written to their widows or families explaining the purpose of the survey and asking them to complete a questionary. The questions relating to smoking habits were:

1. If he never smoked please put a (√) here .....

2. If he was not smoking at the time of his last illness but had smoked before that, please say for how many years he had given up smoking .....

3. When he did smoke please tick those items which seem to you to describe most accurately his smoking habits.

Cigarettes per Day	Pipe Tobacco per Week	Cigars per Day
Fewer than 5	1 oz. or less	1
About 5 ..	About 2 oz. (57 g.)	2
,, 10 ..	,, 4 ,, (114 g.)	3 or more
,, 15 ..	,, 8 ,, (227 g.) or more	
,, 20 ..		
,, 25 ..		
,, 30 ..		
,, 35 ..		
,, 40 ..		
,, 50 or more		

These letters, which were repeated on two further occasions when no reply was received, yielded only about 18% response. By 1959 most of the widows of the men concerned had left the home where they had been living when their husbands were still alive and many had moved to other cities. A full-scale search, employing assistants in the major cities and a number of part-time workers in small towns, became necessary. Eventually the families of 603 (54%) of the lung cancer decedents and 635 (51%) of the controls were traced. The rate of response in the different areas and by years is shown in Table I.

TABLE I.—*Response Rates by Areas and Years*

	No. of Lung Cancer Deaths	Response		Year	No. of Lung Cancer Deaths	Response	
		Lung Cancer Group %	Control Group %			Lung Cancer Group %	Control Group %
Union-born:							
5 main cities	335	59·1	57·9	1947	68	45·6	57·3
Other urban	342	45·3	40·6	1948	70	40·0	47·1
Rural ..	167	47·9	47·8	1949	79	45·6	32·9
Total	844	51·3	49·0	1950	77	39·0	39·0
				1951	105	53·3	48·6
U.K.-born:							
5 main cities	189*	63·0	56·9	1952	122	51·6	37·7
Other urban	58	77·6	64·0	1953	129	54·3	67·8
Rural ..	18	33·3	61·1	1954	153	58·8	63·4
Total	265	64·2	58·8	1955	154	62·3	50·6
				1956	152	70·4	39·5
Combined total ..	1,109	54·4	51·3	Total	1,109	54·4	51·3

* Includes three extra lung cancer deaths among U.K.-born, previously incorrectly coded, found since the previous paper was published.

A comparison was made of the returns obtained as a result of the original letter and those obtained through the other methods of inquiry, but they showed no material differences in the level of cigarette consumption per day for men in the same main categories of place of birth, residence, and cause of death. There therefore appeared to be no reason why the replies obtained from the different methods of inquiry should not be combined.

Although the response percentage was lower than that obtained in some other investigations into smoking habits, it proved possible to obtain information about the smoking habits of more than half the men aged 45–64 dying of lung cancer in South Africa during the years 1947–56, and the smoking habits fell into such clearly defined and consistent patterns as to suggest that the answers obtained may have been adequately representative of the smoking habits of all those dying from lung cancer.

The average age at death of the respondents was as follows:

	Union-born	U.K.-born
Lung cancer group	56·4 years ..	57·3 years
Control group	56·0 ,, ..	57·0 ,,

These figures appeared to be close enough to justify dispensing with age-standardization of the figures that follow.

Table II summarizes the smoking habits of the lung cancer and control groups in the main areas of South Africa. For this and subsequent tables, men who had given up smoking at the time of their last illness were classified according to the amount reported as most accurately describing their previous smoking habits.

The main percentages and levels of consumption of the respondents are given in Table III. In this and Table IV the figures are based on all cigarette smokers or all pipe smokers, and not, as in Table II, on those smoking only cigarettes or only a pipe.

It is clear that among both Union-born and U.K.-born men aged 45–64 the lung cancer groups contained higher percentages of cigarette smokers and heavier cigarette smokers than the control groups. This association between lung cancer and cigarette smoking appeared in all three types of area (with the exception of U.K.-born men living in rural areas, whose numbers were very small). Further, in the five main cities (Johannesburg, Capetown, Durban, Pretoria, and Port Elizabeth) there was a remarkable similarity in the cigarette-smoking habits of the two lung cancer and the two control groups respectively despite differences in place of birth and upbringing. Thus in the lung cancer group in the five main cities 93% of the Union-born men smoked cigarettes, and they smoked an average of 34 a day, while 95% of the U.K.-born smoked cigarettes and smoked an average of 33 a day. In the control group, 85% of the Union-born smoked cigarettes and smoked an average of 26 a day, while 89% of the U.K.-born smoked cigarettes and smoked an average of 27 a day.

When smoking habits were analysed by five-year age-groups (Table IV), the same similarity among lung cancer decedents regardless of country of birth was found in all urban areas, and among the controls regardless of country of birth in the five main cities. In rural areas there was much less cigarette smoking among the Union-born, while the few U.K.-born men living in rural areas were usually city dwellers who had retired to the country and had smoking habits very similar to those of U.K.-born men living in the cities.

TABLE II.—*Smoking Habits of Men aged 45–64 Dying of Lung Cancer in South Africa 1947–56 and of Controls.*

	Place of Birth	Non-smokers	Cigarettes-only Smokers				Pipe-only Smokers	All Other Smokers	Total	Total Recorded Lung Cancer Deaths
			1–20 a Day	25–45 a Day	50+ a Day	Total				
Lung Cancer Deaths										
Durban ..	Union	—	5	21	7	33	1	6	40	77
,, ..	U.K.	—	6	20	9	35	1	7	43	62
Johannesburg ..	Union	—	6	25	12	43	1	16	60	110
,, ..	U.K.	—	6	21	6	33	1	3	37	58
Capetown ..	Union	1	5	18	6	29	2	9	41	78
,, ..	U.K.	—	3	12	2	17	—	1	18	48
Pretoria and Port Elizabeth ..	Union	5	9	17	16	42	3	7	57	70
,, ,,	U.K.	1	1	16	—	17	3	—	21	21
5 main cities ..	Union	6	25	81	41	147	7	38	198	335
,, ,, ,, ..	U.K.	1	16	69	17	102	5	11	119	189
Other urban ..	Union	1	20	46	23	89	8	57	155	342
,, ,, ..	U.K.	1	7	20	12	39	—	5	45	58
Rural ..	Union	3	5	9	8	22	29	26	80	167
,, ..	U.K.	—	—	3	1	4	—	2	6	18
Total ..	Union	10	50	136	72	258	44	121	433	844
,, ..	U.K.	2	23	92	30	145	5	18	170	265
Other Deaths										Population 1951 Census
Durban ..	Union	6	20	19	9	48	3	6	63	6,937
,, ..	U.K.	3	12	17	7	36	3	1	43	3,478
Johannesburg ..	Union	6	19	23	6	48	4	3	61	15,304
,, ..	U.K.	1	13	11	3	27	2	5	35	4,978
Capetown ..	Union	5	17	12	4	33	—	3	41	10,310
,, ..	U.K.	3	11	8	1	20	1	4	28	3,321
Pretoria and Port Elizabeth ..	Union	4	15	16	1	32	5	13	54	10,919
,, ,,	U.K.	—	3	7	—	10	—	3	13	1,475
5 main cities ..	Union	21	71	70	20	161	12	25	219	43,470
,, ,, ,, ..	U.K.	7	39	43	11	93	6	13	119	13,261
Other urban ..	Union	19	35	30	8	73	21	42	155	70,806
,, ,, ..	U.K.	2	9	17	3	29	3	7	41	8,202
Rural	Union	12	13	6	2	21	28	29	90	55,767
,, ...	U.K.	—	1	6	1	8	1	2	11	1,910
Total	Union	52	119	106	30	255	61	96	464	170,043
,, ...	U.K.	9	49	66	15	130	10	22	171	23,373

It should be added that many widows of U.K.-born men stated that their husbands had been much lighter smokers before they emigrated to South Africa.

TABLE III.—*Percentage of Cigarette and Pipe Smokers and Average Levels of Consumption*

	Union-born		U.K.-born	
	Lung Cancer	Controls	Lung Cancer	Controls
Five main cities:				
No. of deaths	198	219	119	119
% cigarette smokers	93	85	95	89
Cigarettes per cigarette smoker per day	34	26	33	27
Cigarettes per man per day ..	31	22	32	24
% pipe smokers	22	17	13	16
Average pipe tobacco per week per pipe smoker (oz.)	3·8	4·6	3·4	3·3
Other urban areas:				
No. of deaths	155	155	45	41
% cigarette smokers	94	72	98	88
Cigarettes per cigarette smoker per day	29	24	35	30
Cigarettes per man per day ..	27	17	34	26
% pipe smokers	41	40	11	24
Average pipe tobacco per week per pipe smoker (oz.)	5·3	3·9	5·3	4·8
Rural areas:				
No. of deaths	80	90	6	11
% cigarette smokers	59	54	100	90
Cigarettes per cigarette smoker per day	25	19	27	29
Cigarettes per man per day ..	14	10	27	26
% pipe smokers	68	62	33	18
Average pipe tobacco per week per pipe smoker (oz.)	4·5	3·9	6·0	3·0
All areas:				
No. of deaths	433	464	170	171
% cigarette smokers	87	75	96	89
Cigarettes per cigarette smoker per day	31	24	33	27
Cigarettes per man per day ..	27	18	32	24
% pipe smokers	37	33	14	18
Average pipe tobacco per week per pipe smoker (oz.)	4·6	4·1	4·0	3·8

Occupation

The occupations of the lung cancer groups were analysed in order to investigate the possibility that the lung cancer decedents might have been employed in occupations exposed to air pollution to a greater extent than the controls. If this was so, and if men in these occupations smoked more than men in other occupations, it might then have happened that the association between smoking and lung cancer was wholly or largely indirect. The relevant figures are given in Table V. Occupations regarded as likely to involve exposure to air pollution included engineers, fitters, mechanics, machinists, painters and lorry drivers, while occupations *not* thought likely to involve exposure to air pollution were mainly clerical, administrative, and selling occupations.

There was thus no evidence that lung cancer decedents were employed to a significantly greater extent than the controls in occupations likely to be exposed to air pollution.

TABLE IV

	Cigarette Consumption per Man per Day			
	Union-born		U.K.-born	
	Lung Cancer	Controls	Lung Cancer	Controls
Five main cities:				
Aged 45–49 ..	34	21	36	27
,, 50–54 ..	29	22	32	20
,, 55–59 ..	34	22	35	27
,, 60–64 ..	31	23	29	22
All ages ..	31	22	32	24
Other urban areas:				
Aged 45–49 ..	32	21	29	31*
,, 50–54 ..	27	22	27	22
,, 55–59 ..	30	16	36	31
,, 60–64 ..	25	14	39	23
All ages ..	27	17	34	26

* Based on five deaths.

TABLE V.—*Analysis by Occupation*

Type of Occupation	Group	Union-born				U.K.-born			
		5 Main Cities	Other Urban	Rural	Total	5 Main Cities	Other Urban	Rural	Total
		Numbers of Men							
Likely to be exposed to air pollution	Lung cancer	99	80	8	187	61	28	—	89
	Control	126	97	6	229	57	23	2	82
Unlikely to be exposed to air pollution	Lung cancer	93	73	72	238	55	17	6	78
	Control	92	58	84	234	62	18	9	89

In 12 the occupation was not stated.

Average Age at Emigration and Death

An analysis of the average ages at emigration and death of the British immigrants showed that those who died from lung cancer between the ages of 45 and 54 years—that is, those who died at a relatively young age—emigrated from Britain at the late average age of 30.2 years, whereas those who died in the later age-group, 55 to 64 years, emigrated from Britain on the average six years younger (24.4 years). Thus those men who spent a longer time in Britain tended on the average to die from lung cancer at an earlier age than those who had emigrated when they were younger. This phenomenon did not occur among the controls, where the average age at emigration (23 to 24 years) was the same for those who died between 45 and 54 and between 55 and 64 years.

Union-born Men Who Visited Britain

It may be significant that the percentage (14%) of the Union-born men who died of lung cancer and had temporarily resided in Britain (for an average of 4.3 years) was higher than the percentage of those dying of other diseases (8%) who had temporarily resided in the U.K. This difference was pronounced in the five main cities, in the other urban areas, and in the rural areas. In the other urban areas of South Africa, 9.7% of the Union-born lung cancer decedents had visited Britain, for an average of 3.2 years, whereas only 1.9% of the controls had visited Britain, for an average of 1.4 years.

Discussion

From the information obtained in the present inquiry it has been possible to estimate the lung cancer mortality rates per 100,000 for Union-born and U.K.-born men aged 45–64 in each area for each type of smoking and, so far as numbers permitted, at each level of smoking. In making these estimates it was assumed that the 1,109 men who died of lung cancer aged 45–64 in 1947–56 were distributed between the different types and levels of smoking in the same proportions as the lung cancer decedents from the same place of birth and residential categories in Table II were distributed, and that the 193,416 white men aged 45–64 resident in South Africa at the time of the 1951 Census, taken as representing the average population for the years 1947–56, were distributed between the different types and levels of smoking in the same proportions as the "other deaths" in the same place of birth and residential categories. By dividing the former figures by the latter for each type and level of smoking and place of birth and residential category, the lung cancer mortality rates shown in Table VI were obtained.

I have given the estimated mortality rates so far as is possible for those smoking one type of product alone, for I know no meaningful way of combining cigarettes and pipe tobacco that adequately reflects their relative lung cancer risk, especially since the lung cancer mortality rate of men smoking a specified quantity of cigarettes plus pipe tobacco or cigars is not infrequently lower than the mortality rate of men smoking this quantity of cigarettes alone—possibly because the former include fewer inhalers.

TABLE VI.—*Lung Cancer in South Africa: Men Aged 45–64. 1947–56. Estimated Lung Cancer Mortality Rates Per 100,000 Per Annum*

Region	Place of Birth	Non-smokers	Cigarettes-only Smokers			Pipe-only Smokers	All Other Smokers	Total
			1–20 per Day	25–45 per Day	50+ per Day			
South Africa:								
Durban ..	Union	—	44	193	136	(58)	175	111
,, ..	U.K.	—	89	209	229	(58)	—	178
Johannesburg	Union	—	23	79	146	(18)	(390)	72
,, ..	U.K.	—	51	210	(220)	(56)	(66)	117
Capetown	Union	—	22	114	(113)	—	(226)	76
,, ..	U.K.	—	(61)	337	(445)	—	(57)	145
Pretoria and Port Elizabeth	Union	(75)	37	65	(97)	(37)	33	64
,,	U.K.	—	(29)	201	—	—	—	142
Five main cities	Union	19	29	100	180	48	139	77
,, ,, ,,	U.K.	(13)	61	234	249	93	109	143
Other urban	Union	—	28	74	139	18	66	48
,, ,, ..	U.K.	—	50	76	(258)	—	46	71
Rural ..	Union	(8)	13	51	(135)	35	30	30
,, ..	U.K.	—	—	(86)	(172)	—	—	94
Total ..	Union	8	25	83	156	30	59	50
,, ..	U.K.	(20)	56	158	245	42	89	113

	Non-smokers	Cigarette Smokers		Pipe Smokers	Total
		Up to 21 per Day	22+ per Day		
U.K.:					
Liverpool and Lancashire (Mersey)	49	221	281	117	216
Lancashire, W. and S.W. ..	36	133	270	142	144
Denbigh S.E., Flint, and Cheshire ..	31	146	305	71	154
N. Wales except Denbigh S.E. and Flint	(7)	81	618	68	102

Note: The figures in parentheses are based on fewer than five deaths in the lung cancer and/or control group.

As mentioned above, in compiling the estimates in Table VI, the smoking habits of the control group were taken as being representative of the current smoking levels of men aged 45–64 in 1947–56 who were still smoking and of the past smoking levels of ex-smokers. It has been possible to obtain an approximate check on the representativeness of these figures from a survey of smoking habits of men aged 45–64 in Johannesburg, Capetown, and Durban in 1960 carried out by Market Research Africa (Pty) Limited (1960, private communication). Table VII compares the figures for the 1947–56 controls with this 1960 survey.

As will be seen, the two sets of figures are reasonably close, the main difference being that the 1947–56 controls

TABLE VII

	Non-smokers	Cigarettes-only Smokers				Pipe-only Smokers	All Other Smokers	Total
		1–20	25–45	50+	Total			
Controls, 1947–56:								
Union-born (%)	10	34	33	12	79	4	7	100
U.K.-born (%)	7	34	34	10	78	6	9	100
1960 Survey in Johannesburg, Capetown, and Durban:		1–25	26–39	40+	Total			
Union-born (%)	11	41	14	16	71	9	9	100
U.K.-born (%)	8	41	16	15	72	8	12	100

had a higher percentage of men who smoked cigarettes only than the 1960 survey, which is perhaps contrary to expectation in view of the increased consumption of cigarettes in the Union in the past 10 years. So far as the percentages smoking different quantities of cigarettes only can be compared, it would appear that the 1947–56 controls may have a higher percentage of very heavy cigarette-only smokers.

It has, of course, been suggested by Berkson (1959) that smoking is associated with higher mortality generally. Consequently we have to consider the possibility that lung cancer mortality rates estimated on the basis of a calculation that used information about smoking habits derived from " other deaths " may have overestimated the lung cancer mortality rates of non-smokers and light smokers and underestimated the rates of heavy smokers. Had this been a factor of major consequence, one would have expected a much lower percentage of non-smokers in the 1947–56 controls than in the 1960 survey and an even greater difference than that shown in Table VII between the percentages of heavy cigarette-only smokers. In fact, it would seem fair to conclude, from the comparison with the 1960 survey, that there is no evidence to suggest that the smoking habits of the control group in this investigation were seriously unrepresentative of the smoking habits of men aged 45–64 living in South Africa in 1947–56.

The attempt to estimate lung cancer mortality rates separately for smokers of 25–45 cigarettes and of 50 or more cigarettes a day has given rise to a few anomalous figures, doubtless due to errors made by widows in estimating their late husband's level of cigarette consumption.

Even so, Table VI does bring out clearly a number of important points:

1. The lung cancer mortality rate of Union-born non-smokers living in rural areas was very small—of the order of 8 per 100,000, if the small number of respondents can be trusted.

2. Also in rural areas the lung cancer mortality rate of Union-born men smoking from 1 to 20 cigarettes a day—namely, 13 deaths per 100,000 per annum—was remarkably low. From this it would seem fair to conclude that any contribution to lung cancer made by moderate cigarette smoking in favourable atmospheric conditions is very small. This is in line with the results of Mills (1960), who estimated the lung cancer mortality rate of male non-smokers, apparently aged 40–69, in rural Ohio at 14 deaths per annum per 100.000 and the corresponding rate of " light smokers " (apparently defined as smokers of 1–14 cigarettes per day) at 10 deaths per annum per 100,000.

3. As one progresses either to higher levels of smoking or to greater levels of urbanization, the lung cancer mortality rates increase. The highest lung cancer mortality rates were found where heavy smoking was combined with exposure to urban air pollution.

4. In each area, for all types of smoking and at every level of smoking, the lung cancer mortality rate of British immigrants was, with a few rare exceptions where numbers were small, equal to or greater—and often substantially greater—than that of Union-born men. The immigrants were, of course, a self-selected group of the U.K. population and might have been expected to be healthier than the average of the U.K. population.

It is interesting to compare the lung cancer mortality rates of South Africa with those of the U.K. For this purpose I have included Stocks's (1958) figures for men aged 45–64 in Table VI. A minor difference, unlikely to invalidate a broad comparison such as this, lies in the slightly different definitions of the different categories of smokers. For example, in my figures, a non-smoker was a man who was reported by my informant as never having smoked ; according to Stocks, a non-smoker was a man who " had never for any period averaged as much as two cigarettes a week and had not smoked a pipe nor cigars." My figures for cigarette smokers are for those who smoked cigarettes only, whereas Stocks's figures are for those who smoked cigarettes with or without other tobacco products and are classified according to the total quantity of tobacco smoked.

It would appear from these figures that non-smokers living anywhere in Stocks's areas except North Wales had about two and a half to three and a half times the lung cancer mortality rate of Union-born men living in rural South Africa who smoked 1 to 20 cigarettes a day. Other comparisons can readily be made, as the figures speak for themselves.

To illustrate further the basic differences between the lung cancer mortality rates of South Africa and the U.K., I have estimated (Table VIII) the number of lung cancer deaths that would have occurred among U.K. men aged 45–64 in 1958 if they had been subject to the lung cancer mortality rates of Union-born men living in rural areas of South Africa in 1947–56, on the basis of data about U.K. smokers supplied by the Tobacco Manufacturers' Standing Committee, London (1960, private communication).

TABLE VIII.—*Theoretical Number of Lung Cancer Deaths in U.K. in* 1958 *on Basis of Mortality Experience of South African Rural Areas*

Smoking Category	No. of Men Aged 45–64 in U.K. in 1958 000	Lung Cancer Mortality Rates, 1947–56, of Union-born Men in Rural Areas per 100,000	Theoretical No of Deaths
1. Men who had never smoked	524	8	42
2. Current smokers or ex-smokers of packeted and/or hand-rolled cigarettes only:			
Under 25 cigarettes per day	3,056	13	397
25–49 cigarettes per day	936	51	477
50+ " " " ..	84	135	113
3. Current smokers or ex-smokers of pipes only ..	726	35	254
4. All other current smokers or ex-smokers	834	30	250
	6,160		1,533
Actual lung cancer deaths of men aged 45–64 in U.K. in 1958:			
England and Wales			9,118
Scotland			1,057
N. Ireland			149
			10,324

This calculation shows that if U.K. men aged 45–64 in 1958 had had the same lung cancer mortality rates at each level of smoking as Union-born men in rural South Africa had had in 1947–56, lung cancer among the U.K. men would have been about 15% of its actual level. If a similar calculation could have been made on the basis of South African figures for 1958, this last figure would probably have been of the order of 20–25%. There could, however, be differences between the extent to which smoking may have contributed to lung cancer in men classified as smoking the same quantities in the two countries. There were differences between U.K. and South African cigarettes and there may have been differences between the methods of smoking them—for example, frequency and volume of puff, prevalence of inhaling—and possibly also in the duration of the habit.

At present there are differences in the length of stub down to which a cigarette is smoked.

During the 1960 survey of smoking habits in the three largest cities, mentioned above, the interviewer was instructed to collect one cigarette stub from each man who finished a cigarette during the course of the interview. Less than 20% did finish a cigarette during the interview, but stubs were collected from 162 South African-born and 118 U.K.-born men aged 45–64 years. The stubs were sent for measurement to Dr. E. C. Halliday, Chief of the National Physical Research Laboratory of the South African Council for Scientific Research. In both groups, about 70% of the stubs were filter-tipped. The average stub-length for the South-African-born was 25.0 mm. and for the U.K.-born 25.6 mm., and the difference between the two groups was not significant. The average stub-length agrees with the two previous South African surveys (Dean, 1959). This is longer than the average stub-length for the U.K. reported by Doll *et al.* (1959), but, on the other hand, the average South African cigarette at the present time is longer than the average U.K. cigarette.

Nevertheless, it seems highly improbable that differences in the method or duration of smoking the same quantities of cigarettes per day or differences between the types of cigarettes smoked in the two countries could by themselves account for the difference between 10,324 and 1,533 lung cancer deaths a year among men aged 45–64. Stocks's estimates of the lung cancer mortality rates of male non-smokers aged 45–64 in the different parts of North Wales and Lancashire, quoted in Table VI, suggest that an average figure for U.K. non-smokers as a whole in this age-group might have been of the order of 40 deaths per 100,000 per annum. Even allowing for possible errors in estimation, the U.K. figure is likely to have been several times the figure of 8 deaths per 100,000 per annum for Union-born non-smokers in South Africa. As standards of diagnosis are high in South Africa, this difference would seem to be attributable to the greater prevalence of adverse air conditions in the U.K. This could reflect the effect of climate as well as air pollution.

Stocks, however, has also estimated that in the absence of both smoking and urbanization the lung cancer mortality rate of both men and women aged 35–74 in North Wales was of the order of 10 deaths per 100,000 per annum, and since this was not very different from my estimate of the rate for Union-born non-smokers in rural South Africa, after allowing for the difference in age-groups, it suggests that the British climate by itself is unlikely to be a major factor in contributing to lung cancer. It is therefore difficult to avoid the conclusion that air pollution is largely responsible for the higher lung cancer rate of non-smokers in the U.K.

Moreover, air pollution may have a more than additive effect on the lung cancer rate of smokers. Indeed, the lung cancer mortality rates for U.K. smokers aged 45–64, according to Stocks, exceeded the rate for U.K. immigrants to South Africa by considerably more than 30 deaths per 100,000 per annum at each level of smoking. Although many immigrants increased the amount they smoked after arriving in South Africa, there is still evidence for more than an additive effect by British air pollution among the lighter cigarette smokers. Further, the difference between the lung cancer mortality rates of Union-born men in the five main cities and the rural areas increased at each level from non-smokers (11 deaths per 100,000) to heavy cigarette smokers (45 deaths per 100,000), except for those smoking 50 or more cigarettes a day where numbers in the rural areas were small, suggesting that in South Africa also air pollution had a more than additive effect when combined with smoking. In fact, it would appear that in both South Africa and the U.K. the elimination of air pollution from urban areas would substantially reduce the incidence of lung cancer even if no change occurred in smoking habits. It is perhaps also pertinent to recall that, in U.S.A., Prindle (1961) has reviewed the available data, and concluded that 45%, instead of a much lower figure previously estimated by others, of the lung cancer deaths of white men aged 50–69 in communities of 2,500 or more could be associated with the effect of urbanization.

Conclusion

The rapidly rising incidence of lung cancer would appear to be caused by environmental factors. Carcinogens reach the bronchi through the air we breathe. Previous research, confirmed by this study, has shown that the incidence of lung cancer rises with increased cigarette consumption. The present study provides further strong evidence that the air pollution that accompanies modern urban life, particularly in Britain, is also a major factor in the causation of lung cancer. Apparently we can have either moderate smoking or moderate air pollution with relatively little risk, but we cannot have both and keep lung cancer rates down. In most British cities there is no escape from breathing heavily polluted air; cigarette smoking, however, is voluntary. The risk of lung cancer arising from this combination of factors could be reduced by preventing air pollution, and this would also diminish the incidence of bronchitis. We appear to be at the same stage of inadequate control of air pollution to-day as we were in preventing the contamination of drinking-water 100 years ago, and there is strong evidence that air pollution is causing serious harm to health and is responsible for many deaths.

Summary

In a previous paper it was shown that although the white South African was the heaviest cigarette smoker in the world he had a lung cancer incidence less than half the incidence in Great Britain. However, British men who emigrated to South Africa had a lung cancer mortality rate 44% higher than white South-African-born men between the age of 45 and 64 years. Immigrants from other European countries did not have a higher incidence of lung cancer than the white South African.

This further study is based on questionaries sent to the widows of the lung cancer patients and an equivalent group of controls. Details were obtained about the smoking habits of more than half the men aged 45–64 dying of lung cancer in South Africa during the years 1946–57. These showed that:

1. The lung cancer patients in South Africa had smoked more cigarettes, on average, than the controls; and the risk of lung cancer increased with heavier cigarette-smoking habits.

2. There was no evidence that those who died of lung cancer had been employed to a significantly greater extent than the controls in occupations likely to be exposed to air pollution.

3. The British immigrant who died from lung cancer at the earlier age, 45 to 54, emigrated from Britain at an average age of 30 years; those who died between 55 and 64 emigrated at an average age of 24 years.

4. The percentage of Union-born men who died of lung cancer and had temporarily resided in Britain was higher than the percentage of those dying of other diseases who had temporarily resided in Britain.

5. In South African rural areas the lung cancer mortality rate for men aged 45 to 64 years was very low for both non-smokers and moderate smokers, and increased only with heavy cigarette smoking. This suggests that, in the absence of atmospheric air pollution, smoking fewer than 20 cigarettes a day causes so little irritation to the bronchial cells that the risk of lung cancer is small. In both South Africa and the U.K. the elimination of air pollution from urban areas would substantially reduce the incidence of lung cancer even if no change occurred in smoking habits.

This research was made possible by the co-operation of Dr. H. M. Stoker, director of the South African Census Bureau, and Mr. D. P. J. Botha, the South African Population Registrar, and their staff, who enabled me to trace and study the death certificates of the lung cancer patients and the controls. My wife undertook the massive correspondence of more than 6,000 letters and gave me her constant encouragement.

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CATARACT EXTRACTION AND DIABETES

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For many years it has been recognized that diabetics are prone to cataracts. Indeed, Bence Jones (1865) wrote, "There is no special complication belonging to diabetes unless it be cataract." It was then recognized to occur "early, at 30 or even at 19." Bouchardat (1852), France (1859), and von Graefe (1860) all wrote on the higher incidence of cataract in diabetics. Some authorities recognized that the failure of vision was worse if albuminuria was also present (Bouchardat, 1852; Harley, 1865), but it is likely they did not realize that this was probably due to the presence of retinopathy, almost always associated with albuminuria.

True diabetic cataract is of characteristic morphology, usually occurring bilaterally at the same time, and more commonly in younger diabetics. These cataracts are associated with a period of uncontrolled severe diabetes and are sometimes present at the time of diagnosis, but may appear also after good diabetic control has been established. Very occasionally the lens changes are reversed with continued treatment of the diabetes (Neuberg *et al.*, 1958); but surgical treatment is usually required. Much more common than diabetic cataract is the so-called "senile" cataract, which occurs at an earlier age in the diabetic. It is usually associated with vascular disease, poor control of the diabetes, and sometimes with a family history of cataract (Keen, 1960). Lens opacities may extend with varying degrees of speed, some remarkably slowly, but ultimately surgical extraction is required.

Extraction of the lens in the diabetic has been recognized for more than half a century to be a procedure fraught with risks greater than in the non-diabetic. In pre-insulin days these risks were held to preclude operation in the large majority of cases. Thus Glegg (1920) reported that of the 1,660 cataract extractions performed at the Manchester Eye Infirmary between 1899 and 1920, only 87 were in diabetics and in a large proportion of these there was a serious post-operative complication.

After the introduction of insulin in 1922, treatment of the diabetic became much more satisfactory and operation a less hazardous procedure. Subsequent improvements in surgical technique contributed to this added safety, and the outlook for the diabetic with loss of vision due to cataract is much less gloomy. Nevertheless, in referring to this greatly altered outlook, Nutt (1953) was impressed with the small number of diabetics (30) presenting for operation in Sheffield during the five years which he reviewed, and Dollfuss *et al.* (1958) commented upon a similar conservatism at l'Hôpital de la Pitié in Paris. From our own study it seems likely that only a proportion of patients with visual loss primarily due to cataract have presented for operation, since the incidence of cataract in 900 patients with onset of diabetes after the age of 40 attending the Royal Free Hospital diabetic clinics is some 33%, but only 27% of those with cataract have had lens extraction.

The complications feared in such operations are chiefly those of haemorrhage and infection. The possibility of haemorrhage, accompanied in exceptional cases by disastrous expulsion of the contents of the globe, provided in the past one of the main deterrents to surgery, and the frequent occurrence of an indolent hyphaemia, followed at times by secondary glaucoma, emphasized the operative risks from this cause. Delayed healing of the incision and severe post-operative

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infection leading to hypopyon and panophthalmitis have long been known to be greater hazards in diabetics. Iritis, without signs of frank infection, resistant to treatment, and also terminating in secondary glaucoma in some cases, further reduced the visual gains of cataract extraction in diabetics and occasionally necessitated enucleation. The more fluid vitreous of the eye of the diabetic, which more readily prolapses at operation, has been thought by some to predispose to such complications. With the frequency of such sequelae and the possibility that retinopathy, recognized or unsuspected, might prejudice the visual result, it is not surprising that the attitude to cataract extraction in diabetics has been one of extreme caution.

The effects of accurate diabetic control and of the adoption of modern operative techniques on this picture may be judged by the reduced incidence of complications and the improvement of the visual results in present-day practice. Thus Nutt (1953), contrasting the Sheffield series of 30 diabetic cataract extractions with 50 in non-diabetics, found no greater liability to sepsis or delayed wound healing: 80% of them achieved good or satisfactory vision. Dollfuss *et al.* (1958) found, in two separate groups of 60 and 34 cases of diabetic cataract extractions, an incidence of complications higher than that in non-diabetics; but good or satisfactory visual results were achieved in some 62.3%. The series of 142 extractions in diabetics performed at University College Hospital which Greaves (1961) has reported produced a similar percentage (63) of patients with "useful vision."

A separate problem of the diabetic cataract is its possible association with diabetic retinopathy, which may contribute to the visual loss and add to the risks of operation. The two conditions commonly occur together, presumably because extended duration of the diabetes, its poor control, and the presence of associated vascular disease are aetiological factors common to both conditions. Indeed, of the patients with cataract attending the Royal Free Hospital diabetic clinics, referred to above, 41% also showed retinopathy of some degree. The presence of retinopathy must influence the final outcome, but how far it does so has not been adequately studied; Nutt's series included only four with retinopathy, while Dollfuss *et al.* (1958) did not refer specifically to the effect of this ocular manifestation of diabetes.

Personal Experience

Our own experience over the past 10 years confirms the belief that the results of cataract extraction in the diabetic are now much better and that the incidence of operative complications is greatly reduced, provided adequate precautions are taken. These include maximum control of the diabetes both before and after the operative period, topical antibiotic prophylaxis, accurate wound-suturing, and preferably intracapsular extraction of the lens. Suitably chosen general anaesthesia was used in most cases, and its benefits no doubt also contributed to the results.

The results of extraction of 69 cataracts in 45 diabetics aged 54 to 83, with an average of 66.7 years, are reported here from observations ranging over periods of 3 months to 10 years, averaging 3 years. The technique employed was intracapsular in 58 and extracapsular in 11 cases. Details of the operative and post-operative complications and the vision achieved are tabulated separately.

Particular regard was paid to the presence and extent of diabetic retinopathy, its course after operation, and its effect upon the visual result. The presence of retinopathy was regarded simply as a bar to a perfect visual result, and, unless it was known to be gross, operation was considered for all cases in which the lens opacity appeared to be the major obstacle to vision. In a proportion of cases operation was undertaken chiefly to reduce the increasing visual disability—for example, when the probability of obtaining good reading vision was known to be precluded by macular damage.

Since the presence and severity of disease of the ocular vessels could be expected to affect both results and complications, cases have been classified into three groups: (1) those with no retinopathy either pre- or post-operatively; (2) those in whom retinopathy was observed first after operation; and (3) those in whom it was known to be present at the time of operation or could be suspected because of its presence in the fellow eye. In eight patients in group 3 (indicated separately in Table II) retinopathy was already present when the diagnosis of diabetes was first made. In general the severity of retinal changes in group 3 cases was greater than that in group 2 cases.

Visual Results

The visual results and complications are summarized in Table I. The results of a contemporary series of 135 extractions of senile cataracts performed in similar circumstances by the same surgeon (H. E. H.) are also given for comparison. The average age of the latter patients was 71.1 years, the range being from 41 to 92 years. The mean follow-up period in this series was two and a half years. As in the diabetic series, the visual results were influenced by the presence of known and unsuspected retinal lesions, responsible for poor results in six instances.

TABLE I.—*Visual Results*

Group	Good	Satisfactory	Poor	Incidence of Complications
Diabetic series :				
1. Free from retinopathy	80%	10%	10%	20%
2. Retinopathy observed after operation ..	58%	15·5%	26·5%	36·8%
3. Pre-operative retinopathy :				
Developing after diagnosis	28%	22%	50%	50%
Present at diagnosis ..	8·3%	16·7%	75%	66·7%
Non-diabetic series	78·6%	13·3%	8·1%	30·4%

Visual acuities of 6/12 to 6/6 were classified as good, those of 6/36 to 6/18 as satisfactory, and those of less than 6/36 as poor. The majority of patients in whom poor results were obtained had, nevertheless, sufficient improvement of vision to enable them to continue with some sighted occupation, so that the number certified as blind was seven. A poor result is therefore not necessarily synonymous with surgical failure.

Of the 69 eyes submitted to operation a good result was obtained in 48%, a satisfactory one in 16%, and a poor one in 36%. Four of the poor results were due to post-operative complications, three to lesions unrelated to either diabetes or operation, and 18 to involvement of the macula in diabetic retinopathy. Of the seven patients who had a poor result in one eye, four achieved a satisfactory and three a good result in the other eye, and of the seven patients certified as blind the diabetic condition could in itself be held responsible in only four.

As might be expected, group 1 has the highest proportion of good results (80%), a figure comparable to that seen in the non-diabetic group. Among those with retinopathy it is gratifying to find that so large a proportion achieved and retained, in a number of cases for several years, good or adequate vision.

Analysis of cases which failed to achieve a good result (Table II) shows that in the great majority this failure resulted from the presence of retinopathy which involved the macula. In four cases (22 L, 24, 36, and 44) it has been seen as the result of remote complications

TABLE II.—*Analysis of Cases Which Failed to Achieve a Good Result*

Case	Complications		Lesion Responsible for Visual Defect	Diabetic Control at Operation	Hypertension*
	Operative	Post-op.			
Group 1 (15 cases, 20 extractions)					
6	Nil	Nil	Simple glaucoma	Poor	Nil
8	,,	,,	Uncertain	Fair	1
11	,,	,,	Art. Ret.	Poor	1
14	,,	Mal. Ex.	Mal. Ex.	Good	Nil
Group 2 (*11 cases, 19 extractions*)					
17	Nil	Nil	Diab. Ret.	Good	2
18	,,	,,	,, ,,	Fair	2
19	,,	,,	,, ,,	Good	2
22 R	,,	Hyphaemia	,, ,,	,,	1
22 L	Vit. loss	Aph. Glauc.	Aphakic Glauc.	Fair	1
24	Nil	Ret. Det.	Ret. Det.	Very good	1
26 R	,,	Iris Pro.	Diab. Ret.	Fair	1
26 L	,,	,, ,,	,, ,,	,,	1
Group 3 (19 *cases*, 30 *extractions*)					
27	Vit. loss	Nil	Diab. Ret.	Fair	1
30 R	Nil	,,	,, ,,	Very good	1
30 L	,,	Hyphaemia	,, ,,	,, ,,	1
31 R	,,	Nil	,, ,,	Good	1
31 L	Vit. loss	Iris Pro.	,, ,,	,,	1
32 R	Nil	Vit. Haem.	,, ,,	Fair	2
32 L	,,	Nil	,, ,,	,	2
33 R	,,	Iritis	,, ,,	,,	Nil
33 L	,,	Hyphaemia	,, ,,	,,	,,
34	,,	Nil	,, ,,	Good	1
35 R	,,	Hyphaemia	,, ,,	Fair	1
35		Chor. Det.			
35 L	,,	Vit. Haem.			
		Nil	,, ,,	,,	1
36	Vit. loss	D.W.H.			
		Aph. Glauc.	Aph. Glauc.	Very good	1
Retinopathy Present at Diagnosis of Diabetes					
38	Nil	Iritis	Diab. Ret.	Poor	1
39 R	,,	Nil	,, ,,	Good	Nil
39 L	,,	Iris Pro.	,, ,,	,,	,,
40 R	,,	Vit. Haem.	,, ,,	Very good	1
40 L	,,	,,	,, ,,	,,	1
41	,,	Nil ,,	,, ,,	Fair ,,	1
42	,,	Chor. Det.	,, ,,	Very good	1
43	,,	,,	,, ,,	,, ,,	1
	,,	Vit. Haem.	,, ,,	,, ,,	1
44	,,	Ret. Det.	Ret. Det.	Good	1
45 R	,,	Chor. Det.	Diab. Ret.	,,	1
45 L	,,	Nil	,, ,,	,,	1

*1 = B.P. > 160/100. 2 = B.P. > 200/120. 3 = B.P. > 250/140.
Mal. Ex. = Malignant exophthalmos. Vit. loss = Vitreous loss. Diab. Ret. = Diabetic retinopathy. Aph. Glauc. = Aphakic glaucoma. Ret. Det. = Retinal detachment. Iris Pro. = Iris prolapse. Vit. Haem. = Vitreous haemorrhage. Chor. Det. = Choroidal detachment. D.W.H. = Delayed wound-healing. Art. Ret. = Arteriosclerotic retinopathy.

which are by no means peculiar to diabetes. In a further three (Cases 6, 11, and 14) it arose from the incidental presence of a non-diabetic condition. In only one case could poor diabetic control be held responsible for the poor visual result; but the role of hypertension, noted with increasing frequency in groups 2 and 3, is probably more important and is discussed below.

Complications

The total number of complications in the diabetic series was 40, which occurred in 28 of 69 extractions, and in the non-diabetic series 41, which occurred in 38 of 135 extractions (see Table III). In most cases, however (all instances of hyphaemia, iris prolapse, iritis, and choroidal detachment, and all but two of vitreous loss), these complications had no effect upon the ultimate visual result. The general incidence is comparable with the figures reported by Dollfuss *et al.* (1958), 55 of 94 extractions, and by Nutt (1953), 12 of 30 extractions. Individual complications show an expected variation in incidence and effect in the four

TABLE III.—*Operative and Non-operative Complications*

	Diabetic Series					Non-Diab. Series	
	Group			Total			
	1	2	3	No.	%	No.	%
Operative: vitreous loss	1	1	3	5	7·2	10	7·5
Early post-operative:							
Hyphaemia ..	3	1	3	7	10·1	8	5·9
Iris prolapse		3	2	5	7·2	9	6·7
Choroidal detachment		1	4	5	7·2	3	2·3
Delayed wound healing			2	2	2·9		
Iritis	1	3	3	7	10·1	2	1·5
Late post-operative:							
Secondary glaucoma		1	1	2	2·9	4	3·0
Retinal detachment		1	1	2	2·9	2	1·5
Vitreous haemorrhage			5	5	7·2		
Sympathetic ophthalmia						1	0·75
Corneal dystrophy ..						2	1·5
	5	11	24	40		41	

series. In none of them, however, has operative haemorrhage or post-operative hyphaemia been a serious problem. Post-operative iritis was seen with much the same frequency in all four, but responded better to treatment in our own (where no ultimate ill effects upon vision was observed) and in Greaves's (1961) series than in the French one (blindness in 3 of 12 affected eyes) or in that of Nutt (4 of 8 affected eyes enucleated). The proportion developing secondary glaucoma in our series (2.9%) was lower than in the French series (10.6%) and its effects upon vision were much less serious. This may perhaps be associated with the poorer response to treatment of iritis in that series.

Delayed wound-healing occurred in two of our cases. It was seen once by Nutt and eight times in Greaves's series, but did not occur in the French series, and is evidently not now as serious a hazard as formerly. In the French series, however, there was serious loss of vision in three cases as the result of a form of trophic keratitis which did not affect any of our cases.

The incidence of complications is seen (Table III) to be greater as the severity of the retinopathy increases. In the group of eight patients in whom this was manifest at the time of diagnosis (see above) it was at its highest, 8 of the 12 eyes in which extractions were performed being affected. These provided a large proportion of the complications seen as well as of the "poor" results of the whole series.

Intractable iritis and secondary glaucoma may still constitute risks which are greater in the diabetic than the non-diabetic eye; but the satisfactory response to treatment of the seven cases of post-operative iritis seen in the present series and the associated lower incidence of secondary glaucoma suggest that these risks need not rank as serious contraindications to operation.

Diabetic Retinopathy and Operation

Diabetic retinopathy is complex, with many different types of lesion: micro-aneurysms, venous distension, loops, and varicosities; haemorrhages; exudates; changes presumed to be the result of retinal ischaemia, to be followed by formation of "new" vessels and of fibrous tissue extending into the vitreous. The prognosis of retinopathy is uncertain. Although since the days of Mackenzie and Nettleship (1877) it has been recognized

that occasionally certain of these lesions may remain static or regress, it is generally believed that its course is steadily downhill.

The cause of retinopathy and of its fluctuations is not known. Its incidence increases with the duration of the diabetes; but it is becoming increasingly accepted that poor diabetic control, with its consequent metabolic effects, plays an important if not a crucial part. Thus all the 79 diabetics free from complications after 25 years of diabetes, and so awarded the "Joslin Victory Medal," were meticulously controlled over the whole period (Root *et al.*, 1959). In many reports, such as those of Keiding *et al.* (1952), Dunlop (1954), White (1956a, 1956b), and Johnsson (1960), the incidence of retinopathy is highest in those with poor control of the diabetes.

In the diabetic with onset of disease in middle or later life, retinopathy is commonly present when the diabetes is recognized, the result of the insidious nature of the disease and the almost universal delay in diagnosis. In this group of diabetics treatment can be expected only to slow down or arrest the course of retinopathy and presumably cannot repair the damage already done to the retinal vessels. Such patients may suffer the consequences of major haemorrhages as the result of pre-existing damage, in spite of adequate therapy of their diabetes.

The effects of the trauma of operation upon such diseased vasculature and, conversely, the influence of its presence on operative complications and visual results are uncertain, but some light is thrown on these problems by the experience gained in the present study. The influence of retinopathy on the visual results is apparent from Table I. Where no retinopathy was detected good or satisfactory visual results were achieved in 90% of cases, whereas when retinopathy was detected only post-operatively the percentage fell to 73.5, and where it had existed pre-operatively, often for long periods, to 40. These differences are the result of the visual effects of retinitis proliferans or haemorrhage involving the macula.

This prejudicial effect of manifest vascular disease of the eye is seen even more clearly from the results in the small group of eight patients who had retinopathy at the time of diagnosis of their diabetes. In 75% of their eyes the visual result was poor and in only 16.7% was it satisfactory.

In a significant number of patients the retinopathy was observed to become haemorrhagic in the weeks or months following operation. In some this could be attributed to inadequate control, but in others this explanation could not be offered, and it seems reasonable to consider whether the changes occurring after operation could be held responsible, in particular as the result of the ocular hypotony produced. In respect of the major surgical haemorrhagic complications, as has already been demonstrated, the part which this plays in cataract extraction in the diabetic is no greater than that in the non-diabetic. Vitreous haemorrhage, which might properly be used as an index of the retinal vascular response to hypotony, resembles these in that it has been infrequent, occurring in only five eyes, only one of them in the early post-operative weeks. It is important to note, however, that one of these patients showed a greatly increased capillary fragility shortly before operation and that another, whose retinopathy progressed after operation, had increased fragility afterwards. Some with normal fragility suffered no such deterioration, but these were chance and isolated observations, not part of a planned investigation.

Also of interest is the case of a patient whose retinopathy became haemorrhagic and more extensive in the recently operated eye while that in the fellow eye, operated upon several years previously, remained slight and static. In another patient similar deterioration in retinopathy was seen in the operated eye but not in the unoperated one; this regressed after a year and is now minimal.

Hypertension of a moderate degree, found in the majority of elderly diabetics, especially those with retinopathy, may play some part in the deterioration of diabetic retinopathy. Although it is difficult to be certain of its precise role, almost all of our patients with a poor visual result due to an extension of retinopathy after lens extraction had some degree of hypertension. It seems reasonable to suggest that, in some patients at least, hypertension plays a part in causing retinal haemorrhage after the intraocular tension has been reduced by operation. Suitable pre-operative control of blood-pressure is evidently desirable, and the use of a hypotensive adjunct to anaesthesia, such as the pethidine and chlorpromazine mixture used in most cases in this series, may be advantageous.

Discussion

In spite of the great improvement in the treatment of diabetes brought about by insulin, the diabetic eye cannot be regarded as a normal one, as Nutt pointed out, when cataract extraction must be considered. The results of the present survey, however, justify the belief that the additional risks are much less severe than past reports suggest and that, when impaired vision is added to the other handicaps to which the diabetic is prone, operation can be considered in most cases with confidence that some degree of useful vision will be restored.

Among the factors responsible for the reduced incidence and severity of complications in this series, a prominent place must be given to improvements in surgical technique, which have now become standard practice. One of these is intracapsular extraction of the lens, as emphasized by Nutt, probably because of the smaller degree of intraocular irritation resulting from its complete removal. Also beneficial is the pressure upon the iris by the small air bubble injected into the anterior chamber at the conclusion of the operation, in that this may discourage haemorrhage from the diseased vessels of the iris and thus may contribute to the lower incidence of hyphaemia. Accurate suturing of the wound, technically possible only in recent years, must be largely responsible for the reduction in the incidence of delayed healing. Antibiotic prophylaxis and the use of steroids topically are undoubtedly important new aspects in the treatment of iritis.

Nevertheless the most important single factor is probably control of the diabetes. Direct evidence of the role of this control in reducing the incidence of operative and post-operative complications is not at once apparent from the results which we have quoted; but their lessened severity is felt to be largely due to the degree of stability possible before, during, and after operation—chiefly the result of patient attention by conscientious house-surgeons and registrars. No patient was operated on if his diabetes was badly out of control.

with dehydration or ketosis. More that half of the operations (42) were performed with either good or very good control; but in eight cases, after prolonged attempts at stabilization, control remained poor. The influence of this control on the incidence of complications is uncertain in view of the small number seen; but it is noteworthy that half of the cases of hyphaemia and four out of seven cases of iritis arose in patients in whom good control could not be achieved.

In the presence of retinopathy the possibility must be considered that it may extend post-operatively. Although this was believed to have happened in a few cases in this series, it is clearly not an inevitable consequence of operation. The possible role of hypertension in this respect has already been discussed. Another possible factor in this connexion is the increased capillary fragility of some diabetics. This was first described by Hanum (1939), particularly in association with retinopathy, and his findings were later confirmed (Foxworthy, 1945; Friedenwald, 1949; Barnes, 1950). Although Hanum noted its variability, no adequate study has yet been made, so far as we are aware, of the relationship between changes in capillary fragility and the various phases of retinopathy. The cases of vitreous haemorrhage associated with increased fragility in this series already referred to, as well as the general principles involved, suggest that some correlation may be found between increases in the haemorrhagic type of retinopathy (the form most damaging to vision after operation) and increased capillary fragility as demonstrated by the sphygmomanometer test. Friedenwald (1950) indeed suggests as much. It may well be that if an increased liability to post-operative progress of the retinopathy could be detected by means of the capillary fragility tests, then such tests might be used to indicate the most favourable time for operation. This particular aspect is being studied at the present time.

The cause of this increased capillary fragility in certain diabetics is not known. Early work by Friedenwald suggested that this might be deficiency of vitamin C, a theory which may account for Nutt giving large doses of vitamin C to his patients before cataract extractions. Friedenwald (1949), however, subsequently reported that he could find no evidence of deficiency of ascorbic acid in diabetics, and no relationship of this to the abnormal capillary fragility.

With reduced operative risks, the indications for cataract extraction in the diabetic must be reconsidered. Operation can now be undertaken on purely visual grounds rather than late in the course of the cataract and the diabetes. On technical grounds this is desirable, as it facilitates the use of the intracapsular technique. Removal of the second cataract—an important factor in restoring mobility to aged patients—may be undertaken with greater confidence, and often confers greater benefit in the diabetic than in the non-diabetic, particularly if the result of the first operation has been poor as the result of chance involvement of the macula. This was, in fact, so in 7 of the 22 cases of the present series in which both cataracts were extracted, the result in the second eye being superior to that in the first.

Early operation is probably desirable also on general grounds, since the effects of hypertension and occlusive vascular disease, as well as the more specific diabetic disease of the ocular vessels, are likely to increase with the increasing duration of the diabetes; and with them the hazards of operation.

Summary

The indications for cataract extraction in the diabetic, its complications, and the operative and visual effects of retinopathy are reviewed in the light of a personal series of 69 such extractions. The operative results are compared with a similar personal series of 135 extractions in non-diabetics.

The incidence and severity of operative complications are found to be greatly reduced with present-day techniques when adequate control of the diabetes can be achieved: delayed wound-healing, sepsis, and secondary glaucoma are seen with but little greater frequency than in non-diabetics.

Ocular vascular disease, indicated by the presence of retinopathy, clearly provides the chief predisposition to haemorrhagic complications; but these, when they occur, are no longer disastrous, and in most cases are without prejudicial effect upon the ultimate visual result. Retinopathy does not invariably increase after operation, and may regress. If the macula is involved in it vision suffers; but it need not of itself be held to contraindicate operation and thus involve the acceptance of inevitable blindness. In view of the fact that the vascular disease tends to increase in severity as the disease continues, a particular indication for operating early rather than late arises in diabetics.

We are grateful to the physicians of the Royal Free Hospital whose cases have been confided to our care, and particularly to Dr. Una Ledingham, from whose diabetic clinics the majority of them were drawn.

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The Physiotherapist and the Remedial Gymnast, a revised booklet in the "Choice of Careers" series, has been published by the Central Youth Employment Executive. (H.M.S.O., price 1s. net.) The booklet deals with the work and training of physiotherapists and remedial gymnasts in the National Health Service, where the majority are employed, and also indicates other spheres of the profession, including the fighting services. Information is given about the educational qualifications required, the training courses available, openings and salaries, and there is a list of the schools at which training is given.

EARLY INTENSIVE OCCLUSION IN STRABISMUS WITH NON-CENTRAL FIXATION

PRELIMINARY RESULTS

BY

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Convergent squint is commonly associated with considerable loss of vision in the squinting eye, and not infrequently there is loss of steady central fixation in the same eye. Analysis of the type of fixation in children with convergent squint (Scully and Naylor, 1961 ; Scully, 1961) has shown that those who attend for examination a short interval after the onset of squint are less likely to have non-central fixation. The incidence of such a fixation defect is also less if the age at onset of the squint is late and if high anisometropia is absent, but the effect of the interval between the onset of squint and examination appears to be independent of these factors. This suggests that non-central fixation is an acquired condition in many patients, and that early examination and treatment may reduce the incidence of non-central fixation. Moreover, the lower incidence (15%) of non-central fixation in an unselected group of patients who have received conventional treatment, including occlusion of the good eye where necessary, compared with the incidence (25%) in new patients in the same clinic (Scully, 1961), suggests that such treatment may well have been effective in re-establishing central fixation in some patients.

Sutcliffe (1958) has found that conventional occlusion of the fixing eye, if carried out with sufficient vigour, results in the achievement of equal vision in almost all patients, some of whom are likely to have had non-central fixation, though special tests were not done to determine this. On the other hand, it has been stated (Bangerter, 1953 ; Cüppers, 1958) that occlusion of the fixing eye in cases of squint with non-central fixation serves only to intensify the eccentric fixation and that occlusion of the eccentrically fixing eye (which is necessary during and before pleoptic treatment) may result in the attainment of central fixation in the squinting eye. Mayweg and Massie (1958) have also advocated occlusion of the eccentrically fixing eye in an attempt to attain central fixation, but my experience of cases so treated for periods of 6 to 12 months has only infrequently resulted in the achievement of central fixation.

Selection of Patients

During the period October 15, 1960, to February 28, 1961, 245 children with convergent squint were seen as new patients at the Manchester Royal Eye Hospital ; in a similar period (November 15, 1960, to February 28, 1961) 46 such patients were seen at the Salford School Ophthalmic Clinic. The type of fixation was determined in all except 41 patients who were too young to co-operate in using the visuscope. This instrument is essentially a hand ophthalmoscope in which the bulb is illuminated from the mains through a transformer. Incorporated in the instrument are test marks which may be projected on to the retina by which it is possible to measure the width of the blood-vessels, size of fundus lesions, and differences in level of raised lesions in the retina. Its value in squint rests in the determination of the fixation by means of the star test. The patient is asked to fix a projected star, and the observer is able to locate its position in relation to the foveola. An interpretation may be made of the rigidity or otherwise of the fixation.

The type of non-central fixation is usually specified (Scully, 1961) according to the region on which the visuscope star rests (parafoveolar, paracentral, or eccentric) together with a "wandering" fixation in which the star wanders over the fundus in an irregular fashion, and an "unsteady central" fixation in which the star hovers over the foveolar and perifoveolar areas ; both these latter categories respond well to conventional occlusion treatment (Graham, 1961). It has been found, however, that many cases classified as parafoveolar, paracentral, or eccentric also show a slight oscillatory movement of the star over a small area of the fundus, and it was felt that new patients with such an oscillatory or "plastic" type of fixation might also respond well to vigorous occlusion treatment. It had been noted that occlusion of the good eye in cases where the fixation presented as a rigid one did not respond, the fixation remaining in the same position and perhaps becoming intensified at the same site (Cüppers, 1958). For the present purpose, therefore, the primary classification is into those with and those without the "plastic" type of fixation.

A careful history of the onset of the squint was also taken, with particular reference to the age at onset and whether the squint was of a constant or an intermittent type.

Method of Occlusion

Conventional total occlusion of the fixing eye by an adhesive patch applied to the skin followed as required by "soft" patches applied to the glasses, and later by music-mending paper applied to the lenses, was used in all cases, the method differing from that in general use only by the vigour with which occlusion was pursued. Occlusion was begun at the second visit of the patient after refraction and visuscope examination, when the pupil was still dilated, and without waiting for the provision of glasses. It is well recognized that occlusion therapy in young children is regarded both by the parents and by the children with disfavour, and a defaulter rate of 30% or more is frequent. Emphasis was placed on the necessity for immediate occlusion, and a full and detailed explanation of the meaning of non-central fixation in terms of visual acuity was given to the parent at this interview. Demonstration was given of the projection of the visuscope star on a rubber-stamp diagram of the fundus, and the significance of the fixation at different distances from the macula in terms of visual acuity, as seen direct by the parent on the Snellen chart, was clearly indicated. This full and emphatic explanation was given to each parent irrespective of the parent's intellectual powers, standard of education, or social class. At each subsequent visit changes in the fixation were shown on the fundus diagram and the meaning of this was explained. It was felt that this close co-operation with the parent was a vital factor in the successful treatment of the condition.

Results

Of the 250 children examined with the visuscope, 57 had non-central fixation. In six of these rigid eccentric

fixation was present, with a long interval of time between onset and examination, and the patients were regarded as not suitable for conventional occlusion treatment.

At the time of review the 51 patients treated had been under supervision for four to eight months. All had paid at least six visits to the hospital or clinic, although 25 had to be sent at least one letter to ensure their attendance and 13 of these had required home visiting by a health visitor, several of them on more than one occasion. Failure to attend was usually due to illness of the child or other member of the family.

All except one patient have achieved steady central fixation in both eyes, but in 27 of them this was reached only after a stage in which the originally normal eye developed non-central fixation—a "changeover" of non-central fixation. Four of these 27 had an intermediate stage in which each eye had non-central fixation; at this stage either eye might be the fixing eye, but all eventually show a changeover in squint and eccentric fixation to the originally fixing eye. In all patients with such a changeover in fixation, occlusion of the now squinting and eccentrically fixing eye was continued for two, four, or six weeks in order to establish the new-found central fixation in the other. The period of further patching was decided by two factors—the steadiness of the central fixation as estimated by the visuscope, and, perhaps even more important, the interval of time between the onset and first treatment. The cases occluded for the longer periods were those having a long time interval, with perhaps an uncertain central fixation. The procedure adopted to achieve bilateral central fixation was to occlude totally the centrally fixing and straight eye for one week only and to leave both eyes without occlusion for the second week, after which visuscope examination was repeated. In all the cases studied to date bilateral central fixation ensued.

The Table shows the results in relation to the type of squint, age at onset, interval between onset and attendance at the clinics, the final visual acuity (when the child was old enough to permit testing), and whether or not success was achieved in converting the squint to an alternating type. It will be seen that only one patient failed to achieve bilateral central fixation—this patient had an age at onset of 2 months and an interval before treatment of 10 months. Two of the group aged 3–6 years and one with an intermittent squint failed to achieve equal vision. The two former patients could not be relied upon to give an accurate E test, although their ages at testing were 4 years and 2 months and 4 years and 7 months. The patient with intermittent squint had an age at onset of 2 years and 2 months and an interval before treatment of 5 years and 1 month, and after eight months of occlusion the visual acuity was still unequal.*

Table of Results

Type of Squint	Age at Onset	No. of Patients	Average Interval before Treatment (Months)	Final Bilateral Central Fixation			Final Alternating Squint	Visual Acuity	
				Achieved without "Changeover"	Achieved with "Changeover"	Not Achieved		No. Tested	Equal Acuity
Constant	<2 years	7	6	2	5	—	6	—	—
	2 "	15	6	2	13	—	12	4	4
	3–6 "	20	3·6	13	7	—	20	20	18
Intermittent	All ages	9	26	6	2	1	5	6	5

The period of occlusion required to establish central fixation in the squinting eye was slightly greater in those aged under 3 years at onset (period of occlusion from 2 to 24 weeks, average 12 weeks) than in those aged 3–6 years and those with intermittent squint, where the period of occlusion varied from 2 to 7 weeks, average 7.5 weeks, and from 2 to 19 weeks, average 8 weeks.

A changeover in eccentric fixation was also more common in those under 3 years; it occurred at any time from 2 to 26 weeks after occlusion began, though the average was between 4 and 6 weeks for all groups.

In a recent follow-up of cases who had ceased supervision several months ago, 12 have been sent for and seven have attended to date. Three of these have been re-examined three months after their last attendance, two four months after and two five months after. All have retained central fixation, five of the seven have retained equal vision, and two have lost one line on the Snellen chart.

Discussion

The results obtained from conventional occlusion in this series are astonishingly good, and are much better than those found in the amblyopia clinic of the Manchester Royal Eye Hospital in patients who have been attending hospital for some time and in most of whom the eccentric fixation has been ascertained many months and sometimes a year or two after the commencement of supervision. Two factors are probably of importance. In the first place, the time between onset of squint and treatment is relatively short in most cases, and none of the children had had any previous treatment whatever; it may well be that intermittent and ineffective treatment is a bar to subsequent achievement of central fixation, as Bangerter (1953) and Cüppers (1958) suggest. The second and possibly more important factor is the extremely intensive nature of the occlusion used in the present series. It has repeatedly been found that parents do not appreciate the importance of maintaining total occlusion for every minute of the day. Forceful explanation, followed by repeated questioning and encouragement on subsequent visits, is essential: half-hearted explanations of the condition being treated and ineffective follow-up are of no avail. In the present series this policy produced no permanent defaulters and is probably largely responsible for the excellent results.

Summary

In a consecutive series of 291 children attending as new patients with convergent squint, the type of fixation was determined in all except 41 who were too young to co-operate; 57 were found to have non-central fixation in the squinting eye. Of these, six had rigid eccentric fixation; the remaining 51, with a more "plastic" type of fixation, were treated by intensive occlusion of the fixing eye.

*Since tabulation of the results, the patient with an age at onset of 2 months has achieved bilateral central fixation and can alternate, although not freely, and the patient with the intermittent squint still has unequal vision after 11 months' occlusion.

All except one patient achieved bilateral central fixation, the majority of the squints becoming alternating in type, with equal visual acuity.

In over half the patients a temporary stage occurred in which the non-central fixation and the squint were transferred to the originally fixing eye.

The excellence of these results is ascribed to the fact that none had had any previous treatment, the majority attending for treatment at a relatively early stage after the onset of the squint, and, perhaps even more important, to the intensive and rigorous nature of the occlusion used.

I thank the surgeons of the Manchester Royal Eye Hospital for their reference of cases for study and treatment.

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INTRAOCULAR HAEMORRHAGE AFTER EPIDURAL INJECTION

BY

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In view of the interest in epidural injection shown in the correspondence columns of the *British Medical Journal* during the first half of 1961, we record the case histories of two patients referred to us because of the occurrence of subhyaloid haemorrhages following epidural injection.

Case Reports

Case 1.—A woman aged 36 gave a nine-year history of left lumbar backache, extending to the left leg. This followed childbirth. Examination revealed lumbar pain on extension and right lateral flexion of the spine. The straight-leg-raising test was positive on the left side but there were no other abnormal signs. *X*-ray examination showed narrowing of the disk space between L4 and 5, with bilateral sacralization of the fifth lumbar vertebra. On July 9, 1958, under general anaesthesia, an epidural injection of 120 ml. of isotonic saline was given, followed by manipulation of the spine by extension only. On recovery from the anaesthetic the patient complained of blurring of vision of her right eye and headache. Examination of the fundi revealed multiple retinal haemorrhages in the right eye at the pole and adjacent to the disk, several of which were subhyaloid in type. A month later, as these were still present, a lumbar puncture was carried out, with normal findings. Blood-pressure, Hess test, and bleeding, clotting, and prothrombin times were all normal, as were the blood and platelet counts. When we last saw her, in May, 1961, all haemorrhages had disappeared, but a pigmentary disturbance persisted at the right macula and her right visual acuity was reduced to 6/24. The left vision was 6/5.

Case 2.—A woman aged 39 had a six-months history of low lumbar pain radiating to the left leg. Examination showed no deformity but general limitation of movements of the lumbar spine. There was a slightly positive left straight-leg-raising sign, but the lower limbs were otherwise normal. *X*-ray films showed slight narrowing of the lower two lumbar disk spaces but more severe disk degeneration in the lower thoracic spine. On December 21, 1960, under general anaesthesia, an epidural injection of 120 ml. of isotonic saline was given, followed by manipulation in extension only. Next day she complained of blurred vision in her left eye, with uniocular diplopia in the right eye. Examination showed a retinal haemorrhage close to the right macula, but a very extensive left subhyaloid haemorrhage spreading infero-temporally from the disk and just involving the macula. In spite of bed rest, this latter broke forward to produce a full vitreous haemorrhage with reduction of vision to perception of light only. When she was last seen, in May, 1961, the right fundus was normal, with 6/5 vision, but there was still a large left vitreous haemorrhage, although the vision had recovered to 6/6.

Discussion

It seems likely that the main factor causing the intraocular haemorrhages in these cases is the sudden rise in intracranial pressure. In both cases the spinal symptoms were completely relieved by the injections.

Evans (1930) demonstrated in the cadaver that epidural injection of 100 ml. of dye-stained gelatin solution reached as far as the upper cervical region. Kelman (1944) pointed out that sudden distension of the epidural space causes acute compression of the subarachnoid space, with sudden rise of the C.S.F. pressure, as shown by simultaneous cisternal and spinal readings. Evans demonstrated in a patient by simultaneous readings from a lumbar puncture needle that the C.S.F. pressure rose to 320 mm. of fluid during an epidural injection of 30 ml. of fluid. Injection of 120 ml. must therefore cause a very considerable rise of intracranial pressure, and the injection would have to be made very slowly indeed if this was to be avoided.

The optic nerve is surrounded by an extension of the subarachnoid space, and the central vein of the retina crosses this space as it leaves the optic nerve to join the orbital veins. The retinal blood circulation depends on the pressure in the central vein of the retina being a little higher than the C.S.F. pressure. A rise of the C.S.F. pressure is immediately reflected back to the retinal veins and capillaries. With a lowered intraocular pressure due to general anaesthesia and a possible rise in arterial blood-pressure caused by the rise in intracranial pressure, it is not surprising that retinal haemorrhages can occur. Retinal haemorrhages occurring in patients with subarachnoid haemorrhage may be similarly produced by a similar sudden pressure increase in the subarachnoid space caused by arterial rupture.

The main retinal vessels run superficially in the nerve fibre layer, and the smaller vessels and capillaries dip down into the retina. Haemorrhages of the latter may disrupt the retinal elements and cause permanent damage. Haemorrhages of the large superficial vessels may break forward through the internal limiting membrane, and, if still limited by the hyaloid face of the vitreous, will produce the characteristic subhyaloid haemorrhage—round with a flat top—rather like a half-

full carafe of burgundy. Further haemorrhage may cause a break-through of the hyaloid membrane, to produce a vitreous haemorrhage.

To avoid this serious complication, a slow rate of injection and limitation of the amount injected are obvious precautions. The development of a headache, due perhaps to the rise of intracranial pressure during the procedure, gives warning that the speed of injection needs slowing, but this guide is not available when a general anaesthetic is used. Further tests are necessary to determine how long the raised C.S.F. pressure lasts, but if this is not long, gentle pressure on the eyes through the closed lids at the time of the injection would raise the intraocular pressure and help to support the distended retinal vessels.

Summary

Two cases of retinal haemorrhage apparently caused by epidural injection of saline are recorded, and it is concluded that they were produced by a sudden rise in cerebrospinal pressure causing acute retinal venous congestion.

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MUMPS ARTHRITIS

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Though the occurrence of arthritis in epidemic parotitis is referred to in textbooks of joint disease (Hollander, 1960), paediatrics (Abt, 1925; Griffith and Mitchell, 1941), and infectious disease (Wesselhoeft, 1951; Stimson and Hodes, 1956), the condition seems to deserve wider recognition.

Maisondieu (1924) credited Rilliet with first recording this condition in 1850, added 6 personal cases, and reviewed 12 others. Apart from one other case mentioned by Wesselhoeft (1951), who alone quotes Maisondieu's paper, we have found reports of only eight additional cases (Wilson, 1926; Magida, 1951; Applebaum *et al.*, 1952; Senise *et al.*, 1957), bringing the total to 28 cases, of which four were in females.

Maisondieu's six cases of arthritis occurred among 1,334 cases of mumps, giving an incidence of 0.44%.

This paper presents three further cases of arthritis complicating mumps.

Case Reports

Case 1.—A boy aged 5 years suffered severe transient pain in the right ankle 12 days after the onset of parotitis. Two days later the left ankle became painful and he began to limp. This ankle was swollen, warm, and tender over the posterior and lateral aspect. Movement was limited by severe pain. The temperature was 100.6° F. (38.1° C.). Radiographs of both ankles were normal. The E.S.R. was 50 mm. in one hour (Westergren). The white-cell count was 8,100/c.mm., with normal differential count. The antistreptolysin O titre was normal. The titre to mumps virus was 1/128 to V and 1/64 to S antigen. Within three days all pain and swelling had subsided.

Case 2.—A boy aged 5 years complained of severe pain in the left thigh, made worse by coughing, two weeks after the onset of parotitis. There was tenderness in the left groin with severe muscle spasm on attempted movement of the left hip. The temperature was 100.4° F. (38° C.), and fever continued for seven days. A diagnosis of arthritis of the left hip was made and penicillin was given. Salicylates were administered, but there was no immediate relief of pain or resolution of fever. The total white-cell count on the second day after onset of hip pain was 18.000/c.mm., and on the sixth day 7,000/c.mm., with normal distribution. On the third day abdominal pain and vomiting suggested the possibility of appendicitis, but these symptoms subsided without operation. The abdominal symptoms may have been due to mumps pancreatitis, especially as tenderness persisted in the left hypochondrium for a few more days. The patient was discharged on the fourteenth day free from pain and with full hip movement.

Case 3.—A man aged 43 suffered bilateral parotitis at the same time as one of his sons and two weeks after another son had been affected. Two weeks after the onset of parotitis he developed fever, nausea, and headache and complained of pain and swelling of the left ankle, which confined him to bed. Two days later the left ankle showed slight residual swelling and tenderness. The patient then developed a severe left orchitis. The white-cell count was 14,000/c.mm. (polymorphonuclear leucocytes 89%). The E.S.R. was 34 mm. in one hour (Westergren). The mumps titre was less than 1/4 to V and less than 1/16 to S antigen. Two weeks later it had risen to diagnostic level, being 1/64 to V antigen. The joint recovered fully.

Discussion

In the reported cases arthritis showed a male predominance of seven to one. Other complications of mumps also show a predilection for the male, notably mumps paralysis (Lennette *et al.*, 1960), in which all 11 patients were boys. The age incidence was 11 to 47 years. Onset was from 8 days before to 29 days after the parotitis, and the duration was between two days and two months. One or many joints were involved and recovery was complete.

When performed blood sedimentation rates were found to be increased and complement-fixation or viral-agglutination titres were diagnostic. Usually a polymorphonuclear leucocytosis was found.

Mumps virus has been recovered from the saliva and urine (Utz *et al.*, 1957), thyroid (Eylan *et al.*, 1957), and cerebrospinal fluid (Lavergne *et al.*, 1937), and was found in the blood by Woolstein (1918). We can find no reference to isolation from the joint. Nevertheless, the arthritis may be due to viral infection of the joint, for it occurs commonly at the same time as other complications in which the virus has been recovered from the affected organ or system. It is our intention, when next we meet this complication, to attempt to grow virus from the joint.

Summary and Conclusions

Three cases of arthritis complicating mumps are reported, and the literature is reviewed.

If mumps were considered in the differential diagnosis of arthritis in the young, especially in males, we suspect that more cases would be recognized.

Numerous cases of infection with mumps virus have been recorded without parotitis; among these are pancreatitis (Friedjung, 1928), orchitis (Connolly, 1953), and meningitis (Van Rooyen and Rhodes, 1948), the diagnosis being made on the basis of a significant rise in agglutination titres. We can find no reference to arthritis sine parotitis in the literature, but suggest that estimation of viral titres and attempts to grow virus from an affected joint may perhaps lead to recognition of this condition.

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Preliminary Communications

Achalasia of the Oesophagus in Children

Achalasia of the oesophagus is seen and well recognized in adults but is rare in children. There may be failure to diagnose it in some children, for the symptoms can be confusing. A case history is presented of achalasia in a baby operated on at the age of 6 months. I had not previously seen this condition in patients under 17 years. Clagett (1961) stated that during 1936–59, 32 patients aged 15 years and younger with achalasia were seen at the Mayo Clinic; the youngest was under 1 year, and definite symptoms were present in 10 patients before they had reached 1 year of age. Swenson and Oeconomopoulos (1961) reported six cases in children, none of them being under 1 year of age.

CASE RECORD

A male infant of Maltese nationality was admitted to Westminster Children's Hospital on April 26, 1960, with the following history. He was born on September 14, 1959, after eight hours' labour, and was the first child of a father aged 25 and mother aged 23. The parents suffered no illnesses during the pregnancy. For vomiting of pregnancy after the first month the mother received 16 tablets of ancotoxin. Birth weight was 8 lb. 10 oz. (3.9 kg.). On the day after birth he was inadvertently given two teaspoonfuls of hot water, the mother being unaware of its temperature. At his baptism on September 27 he swallowed well coarse grains of local salt and was breast-fed up to 19 days. On October 3 the mother developed mastitis and the child started feeds of Cow & Gate half-cream milk. After taking the hot water when 1 day old, the child would not feed from the breast, and the hospital doctor declared, "He does not know how to swallow," but this phase passed after two days and no importance was attached to it. On swallowing tepid water subsequently the child would gulp down the liquid with gurgling noises.

During the second week in December he first choked while asleep in his pram a short time after a milk feed. He was thriving normally but started to regurgitate part of his feed after a few minutes. Milk of magnesia and tincture of belladonna were given. On December 24 he started regurgitating yellowish-white fluid. On December 28 he was examined by a throat consultant who found no abnormality down to the pharynx and advised precaution against milk and phlegm ingestion into the bronchi. On January 3, 1960, the infant developed fever, and bronchopneumonia with dehydration was diagnosed and antibiotic given. He was admitted to hospital. Deglutition became worse, and bottle-feeding continued until January 12, when a "polythene" tube was passed, but a radiological examination showed this to be in the lower end of the oesophagus. On January 21 the tube was passed into the stomach.

Before bronchopneumonia developed "nestargel" was given on the supposition that the cardia was too relaxed, but this aggravated the dysphagia. Atropine methonitrate ("eumydrin") and all other medical treatment failed to give relief. The tentative diagnosis of achalasia was made on *x*-ray examination with propyliodine ("dionosil").

On examination the child was happy and looked well; weight 16 lb. 15¼ oz. (7.8 kg.). The temperature and the pulse and respiration rates were normal. No abnormality was detected in the heart, lungs, or abdomen.

Investigations.—Hb, 115%; W.B.C., 16,800/c.mm. Urine normal. Blood chemistry normal. Blood group O, Rh positive. Stool cultures negative. Radiological examination of the oesophagus (Fig. 1) with a barium swallow showed that the oesophagus was widely dilated throughout its extent and its lower end tapered to a point at the junction with the cardia, forming a short smooth stricture which relaxed at intervals allowing barium to enter the stomach. Some of the barium spilled over from the oesophagus into the bronchi, which are outlined in the *x*-ray film. The appearances are characteristic of achalasia of the oesophagus. The child was transferred to the country hospital to prepare him for operative treatment. He was readmitted on March 11, 1960.

Operation.—On March 17, 1960, Heller's operation was performed through a left supra-umbilical paramedian incision. The abdominal segment of the oesophagus was identified, and the peritoneum was incised over it so that it could be mobilized into the oesophageal hiatus of the diaphragm. The vagus nerves were carefully safeguarded from injury. An incision 4 cm. long was made through the hypertrophied muscle of the lower end of the oesophagus and extended through the seromuscular layers of the stomach as far as the fundus. All the muscle fibres were carefully divided throughout this incision until the mucosa of the oesophagus and stomach bulged through the divided muscle-coats. Fig. 2 shows the oesophagus after the operation.

Post-operative Course.—The child made an uninterrupted recovery from the operation. On the day after operation he took all his feeds by mouth without any difficulty or regurgitation. There was no further regurgitation or vomiting and he was discharged from hospital on April 14. His weight was then 17 lb. 11 oz. (8 kg.).

Subsequent Course.—The child returned to Malta on April 15 and migrated with his parents to Australia in

October, 1960. He has remained perfectly normal throughout, and the last follow-up report, on July 9, 1961, recorded that the child (then aged 1 year 10 months) was happy, was developing normally, and was growing fast. Deglutition was normal, there was no regurgitation, and the usual foods were being taken in the normal amounts.

TREATMENT

In my patient, as a result of experience of the good results I have achieved in a series of adults with achalasia of the oesophagus, I decided to perform Heller's operation through the abdominal route. I always perform the operation in this way, for it provides an easy and adequate exposure of the lower 5 cm. of the oesophagus and the fundus of the stomach.

I consider that drugs are of no real value in the treatment of achalasia. Dilatation, using a pneumatic dilator, may give temporary relief, but many patients require multiple dilatations. For instance, in Clagett's series 26 young patients were treated by dilatation. In four of them one dilatation was carried out, but symptoms recurred in less than a year. The majority required multiple dilatations—three or more—and one patient needed 18 dilatations in 15 years to maintain deglutition. Repeated dilatation is unsatisfactory for children. I prefer one operation, which, when performed correctly, will give excellent results. Clagett more recently stated that six patients were treated by a Heller type of operation, with an excellent result in five and a good result in one.

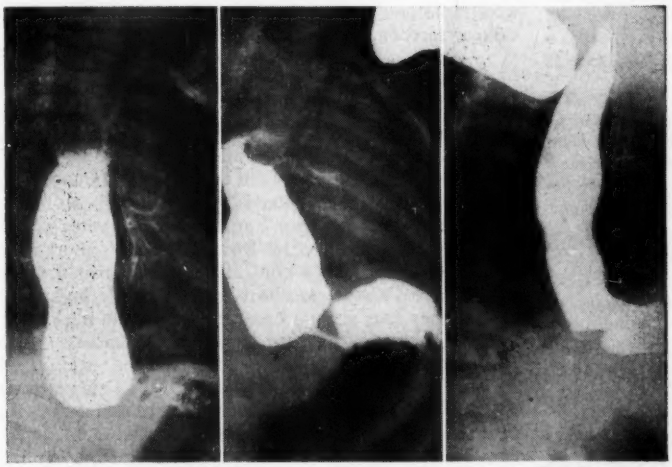

FIG. 1 FIG. 2

FIG. 1.—Pre-operative radiographs of the oesophagus with a barium swallow, showing appearances characteristic of achalasia of the oesophagus (see text).
FIG. 2.—Radiograph of the oesophagus with a barium swallow after Heller's operation. The megaoesophagus has contracted and barium flows freely in a good stream through the cardia into the stomach.

I thank Dr. I. M. Anderson for his helpful co-operation in the treatment of this patient, Dr. L. H. Morris, who gave the anaesthetic, and the nursing staff for their skilful care.

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Medical Memoranda

Peripheral Gangrene in a Case of Myocardial Infarction

Symmetrical peripheral gangrene is a rare complication of myocardial infarction. As illustrated by the case reported here, the gangrene is due to hypotension and arterial spasm in the extremities, not to arterial occlusion.

CASE REPORT

The history of the patient, a man aged 73, was obtained from relatives. He had been well until December 22, 1959, when he suddenly complained of nausea and vomited three times. The next day he complained of chest pain. He remained in bed more or less unaware of his surroundings, having little to eat or drink. On December 25 it was noted that his ears and fingers were blue. His condition remained unchanged until December 30, when he was admitted to hospital.

For five years previously he had experienced chest pain and breathlessness on climbing stairs, and occasionally his fingers had become "dead" and white on exposure to cold. Prior to this illness his health had been excellent and there was no family history of cardiovascular disease.

On examination he appeared alert but could only answer "yes" or "no." He was not breathless at rest. Except for the tips of his fingers and toes his limbs were red and warm. There was superficial gangrene of the toes affecting the skin over the terminal phalanges. The skin of the fingers was similarly affected at the tips for about ½ in. (1.3 cm.) from the nail. A small area of gangrene was present on the septum of the nose. The pulse was regular (100 a minute), the blood-pressure 105/75 mm. Hg, and the respiratory rate 16 a minute. There was no clinical cardiac enlargement. The heart sounds were faint but otherwise normal, and there were no signs of congestive heart failure. All peripheral pulses were palpable. Crepitations were heard at both lung bases, but no other abnormal signs were found in the respiratory system and no abnormality on examination of the abdomen. The tendon jerks were present and equal, the plantar response was bilaterally flexor, and there was no loss of power in the limbs.

The Hb was 105% (15 g./100 ml.), the E.S.R. was raised slightly (22 mm. in one hour Westergren), and the white-cell count was raised to 17,000/c.mm., with a neutrophil leucocytosis. The urine contained a trace of albumin with hyaline casts. The blood urea was raised to 125 mg./100 ml. A chest *x*-ray film showed slight cardiac enlargement, but the lung fields appeared clear. The electrocardiogram showed changes of an extensive myocardial infarct.

He was treated with anticoagulants but not with pressor agents. He survived until January 6, 1960, when he died suddenly.

Necropsy Findings (Dr. J. L. Edwards).—*External:* Edentulous; purple discoloration of fingers and toes; several scabs on back of right calf, 1 cm. each. *Internal:* Fat 2 cm. Atheroma of circle of Willis (moderate). Gross oedema of choroid plexuses. Emphysema. Moderate oedema of lungs. Moderate atheroma of pulmonary artery. Senile changes in heart valves. Petechiae on pericardium. No lumen of left coronary artery could be found over 1 cm. from ostium; heavily calcified. Most of left ventricle was

necrotic and yellow, only reddish portion was towards posterior cusp of mitral valve. Mural thrombus in left ventricle 5 by 3 by 5 cm. Thrombosis of right coronary artery 1 cm. from ostium. Mottling of right ventricle. Gross atheroma of aorta. Slight fibrosis of testes. Diverticulosis of sigmoid. Solid appendix. Prostate measured 3 cm. and showed hyperplasia. Anatomical diagnosis: myocardial infarction; atheroma and thrombosis of coronary arteries; peripheral gangrene. (Dorsalis pedis artery left taken for section.) *Histology:* Heart showed recent infarct and fibrosis. Dorsalis pedis artery appears substantially normal. Lung, spleen, kidney, and pituitary showed little of interest.

COMMENT

In this case the symmetrical nature of the lesions, the presence of all peripheral pulses, and the absence of disease in the artery examined histologically indicate that gangrene resulted from either prolonged hypotension or peripheral vasoconstriction, or both in combination. Non-occlusive symmetrical peripheral gangrene, an uncommon disorder, has been reviewed by Cotton and Bedford (1956). It is nearly always a complication of cardiovascular disease in which there is reduced cardiac output.

The patient was admitted to hospital under the care of Dr. T. E. Gumpert, senior physician, Sheffield Royal Hospital, whom I thank for permission to report the case. I also thank Dr. J. L. Edwards for allowing me to publish his necropsy report.

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Fatal Jaundice after Administration of Pheniprazine

A case is presented where the patient developed fatal liver failure after the administration of pheniprazine ("cavodil"), a mono-amine oxidase inhibitor. The significance of certain contributory factors is discussed.

CASE REPORT

The patient, a woman of 43, was admitted to hospital in hepatic precoma in April, 1961. She had been referred to the out-patient department three months previously complaining of chest pain which had the characteristic clinical features of angina of effort, though the electrocardiogram was normal. Pheniprazine was prescribed in a dose of 6 mg. daily. Three weeks before admission, when she had been receiving pheniprazine for two months, she developed intense nausea followed in a few days by jaundice. At this stage she was given, in addition, perphenazine ("fentazin") 2 mg. q.d.s. to combat her nausea, but this and the pheniprazine were discontinued 14 days later when the jaundice deepened. It had been thought that she was suffering from infective hepatitis as there had been several other cases of this in the same district about this time.

On admission she was deeply jaundiced, very drowsy, and confused. Her condition steadily deteriorated, she became deeply unconscious, and died 48 hours after admission.

Laboratory investigations on admission had shown serum albumin 3.4 g./100 ml.; serum globulin 3.4 g./100 ml.; total serum bilirubin 20 mg./100 ml.; serum thymol turbidity 4 units; serum alkaline phosphatase 15 K.A. units/100 ml.; serum transaminase levels: S.G.O.T. 205 units/ml., S.G.P.T. 720 units/ml.

At necropsy the body was jaundiced. Visceral abnormalities were confined to the liver and gall-bladder. The liver was shrunken, weighing only 780 g. The capsule was smooth, and cut surfaces showed that for the most part the lobules had disappeared and only a few small pale-brown areas persisted where the lobular architecture was preserved. There was a mucocele of the gall-bladder. It contained four faceted stones. The common bile-duct was patent and healthy throughout its length.

Histological examination of the liver showed gross disorganization of its architecture. In most areas the parenchymatous cells had completely disappeared; the portal tracts had become approximated, and contained only red blood cells in the place of the former liver cells. The few surviving liver lobules did not demonstrate any particular pattern of zonal damage. There were many bile plugs in the canaliculi and also in the Kupffer cells of these lobules. In relation to the portal tracts there was both bile-duct proliferation and aggregation due to the collapse of the lobular framework. The portal tracts were only slightly infiltrated by inflammatory cells, which consisted of lymphocytes, plasma cells, and polymorphs. Macrophages containing lipofuscin were also present, indicating the acuity of the process. The histological appearances were those of a massive hepatic necrosis with only a slight cellular reaction.

DISCUSSION

Other reports of liver damage have come from the United States, where pheniprazine is used under the names of "catron" or "JB 516." Beer and Schaffner (1959) described a case of fatal hepatic damage from catron. Greenblatt and Kahn (1959), in a toxicity study of the effects of JB 516 on 37 patients, included a case of "irreversible jaundice" in their description of six cases showing changes in liver function. Berkowitz *et al.* (1961) described a non-fatal case of catron-induced jaundice. Dosage was not in excess of therapeutic levels; they had given 18 mg. daily for two weeks.

Pheniprazine is a potent mono-amine oxidase inhibitor with a more selective action on the brain than iproniazid (Gogerty and Horita, 1959). This property should theoretically allow effective inhibition of the brain enzyme by doses small enough to have no significant effect on the liver. However, no relationship has been established between total dosage of iproniazid and hepatic toxicity, and it is well established that iproniazid is capable of producing severe liver damage in therapeutic doses (Popper, 1958).

In the present case the pathology of the liver is similar to that observed in the cases of iproniazid-induced jaundice studied by Popper (1958) and in the fatal case of catron-induced jaundice reported by Beer and Schaffner (1959), who had only a needle-core of post-mortem liver tissue for study. These authors noted the similarity to infective hepatitis. Our case occurred in a district where there had been several cases of infective hepatitis. From his studies, Popper (1958) concludes that iproniazid may effect its toxic action by the activation of a subclinical viral hepatitis. Pheniprazine may well have a similar action. It would also potentiate an overt attack.

The part played by pheniprazine in the fatal outcome of the illness is complicated by the fact that perphenazine was administered for 10 days, beginning shortly after the onset of jaundice. Perphenazine, a phenothiazine derivative, has only once been reported as producing jaundice (Berkowitz *et al.*, 1961); hepatic biopsy showed hepatic cholestasis. There was some cholestasis in our case, but in the presence of such gross parenchymal necrosis it probably played an insignificant part in producing the fatality.

The possibility of potentiation of pheniprazine by the perphenazine is more difficult to assess. The

manufacturers issue a warning against the possible potentiation of the action and side-effects of phenothiazine compounds by amine oxidase inhibitors. However, the potentiation of toxic actions does not appear to be a very real danger. Combinations of drugs of these two groups have been used in psychiatric practice with apparent impunity (Bailey *et al*, 1959; Ayd, 1960; Holt *et al.*, 1960; Gosline *et al.*, 1960).

Though the experience of many workers indicates that the danger of liver damage by pheniprazine is unequivocally less than with iproniazid, the fact that jaundice and severe hepatic damage can occur in patients treated with this drug should be taken into account when prescribing the drug. The combination of phenothiazines and mono-amine oxidase inhibitors involves a risk the potential of which has not yet been fully assessed.

We are grateful to Dr. A. Morgan Jones, Dr. C. S. D. Don, and Professor A. C. P. Campbell for permission to publish details of this case.

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A Case of Acute Pancreatitis with Methaemalbuminaemia

On October 1, 1960, a sample of serum from a patient known to have acute pancreatitis was noticed to be the colour of strong milkless tea. Schumm's test was positive, showing that the colour was due to methaemalbumin—a curious finding in this patient.

CASE HISTORY

An obese woman of 28 developed intermittent abdominal pain and nausea on September 24, 1960, and by September 28 it had become constant and intense. She was then admitted to hospital, distressed and shocked, with a pulse rate of 120 and a mass of tenderness in the epigastrium; there were no bowel sounds. A diagnosis of acute pancreatitis was made, this being confirmed by a serum amylase of over 3,000 units.

Next day she became slightly jaundiced, and the serum bilirubin was 7.5 mg./100 ml.; on September 30 her temperature and pulse rose, and the blood sugar was found to be 560 mg./100 ml. On October 1 she complained of thirst, and Chvostek's and Trousseau's signs were positive, with a serum calcium of 6.3 mg./100 ml. and low electrolyte levels. At this stage the bronze-coloured serum was noticed, and in spite of supportive treatment her condition deteriorated rapidly and she died in hyperpyrexia on October 2.

At the post-mortem examination the most striking finding was the extent of the fat-necrosis, which was present in the greater omentum, posterior abdominal wall fat, and anterior abdominal wall peritoneum, and also in the parietal pleura, where the intercostal fat was necrotic. About 0.5 l. of haemorrhagic fluid was present in both pleural cavities, and a further 2 l. in the peritoneal cavity.

COMMENT

Methaemalbumin (Fairley, 1941) is formed when haemoglobin is liberated into the plasma in quantities greater than those needed to saturate the haptoglobins, and its presence implies intravascular haemolysis. It occurs in conditions such as blackwater fever, *Clostridium welchii* septicaemia, drug haemolytic anaemias, and pernicious anaemia.

If in this case the presence of methaemalbumin were ascribed to intravascular haemolysis the most likely haemolytic agent would be trypsin. This appears in the circulation only when the quantity released is enough to neutralize the antitryptic agents of the blood (Powers *et al.*, 1955) and therefore only in the severest cases. Rush and Cliffton (1952) showed that in induced pancreatitis in dogs, and also after injection of trypsin, treatment with a proteolytic inhibitor was followed by recovery from shock, and they suggested that proteolysis was due to trypsin itself and to the activation of serum plasminogen to plasmin, which is also a proteolytic enzyme. These may cause haemolysis by attacking the protein leaflets of the erythrocyte membrane, and this can be shown to happen *in vitro*; combination of the resulting haemoglobin breakdown products with albumin can then take place to form methaemalbumin.

An alternative source for the necessary haem is the 2.5 l. of haemorrhagic fluid in the abdominal cavity, for not only can solutes be absorbed from the peritoneal cavity into the circulation but even actual red cells, as is the case in intraperitoneal transfusion. These presumably pass through the stomata described by Florey (1927); transfused erythrocytes can be seen in the dog, and traced by means of radioactive iron as they pass through the anterior mediastinal lymphatics (Halm *et al.*, 1944, quoted by Waite *et al.*, 1956). Chromium studies have also been used to demonstrate the transfused cells in the circulation.

It is surprising that no report similar to this can be found, as haemorrhagic fluid is often present in acute pancreatitis and is a common post-mortem finding. Probably recognizable quantities of methaemalbumin may be formed only in the presence of a large amount of haemorrhagic exudate, and its presence is probably a vaguely quantitative estimate of the volume of the exudate. It may therefore indicate a bad prognosis.

My thanks are due to D. Rossington, F.I.M.L.T., who brought the case to my notice; to Dr. G. Discombe, who discussed the problem and the presentation with me; to Dr. Ariela Pomerance, who performed the post-mortem examination; and to Mr. J. W. P. Gummer, under whose care the patient was admitted, for permission to publish.

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Reviews

FAMOUS G.P.s

Some Famous General Practitioners. And Other Medical Historical Essays. By Zachary Cope, Kt. (Pp. 276+xii; illustrated. 40s.) London: Pitman Medical Publishing Co. Ltd. 1961.

Most if not all of these essays have appeared in medical journals, but Sir Zachary Cope has done well to assemble them in book form. Many of his general practitioners are well known—for instance, Edward Jenner, Adams of Banchory, Sir Patrick Manson, and Sir James Mackenzie. Others, like Lockhart Clarke, F.R.S., and Jonathan Couch, the great-grandfather of Sir Arthur Quiller Couch, will be less familiar. Couch was a zoologist of distinction and gave an early accurate description of *Amphioxus*, or the lancelet. Both Clarke and Couch deserved to be rescued from oblivion.

The involved story of the origin of the general practitioner is ably described; and the important influence of the Society of Apothecaries on medical education, so often ignored, receives due prominence.

In Sir Zachary's erudite company we attend in retrospect the Great Windmill Street School of Anatomy founded by William Hunter; walk with medical students through the last four centuries; inspect surgical museums; admire Sir John Tomes, "the father of the British dental profession"; view Harley Street in a historical setting; glance at the treatment of wounds through the ages; study in the *Medical Balance-Sheet of War* how good may come out of great evil; learn how medicine became a science—though we must not forget that it is still an art; meet J. B. Murphy, famous for his eponymous button, his drip, and his sequence of symptoms in appendicitis; contrast the interesting personalities of Sir Charles Hastings and Thomas Wakley; and marvel at the economic aspects of tobacco addiction.

In chapter 13 several literary surgeons receive their meed of praise, but one omission will be noted—that of Sir Gordon Gordon-Taylor, the medical historian of "the '45" and the biographer of Sir Charles Bell, probably because Sir Zachary Cope has written an account elsewhere of him. This is a book to treasure and re-read.

ARTHUR S. MACNALTY.

MEANING OF MENTAL HEALTH

Cross-Cultural Studies in Mental Health. Identity. Mental Health and Value Systems. Edited by Kenneth Soddy. (Pp. 271+xii 25s.) London: Tavistock Publications. 1961.

This volume contains two studies, which represent the contribution of the Scientific Committee of the World Federation for Mental Health to World Mental Health Year. Their topics were chosen with the aim of seeking "clarification and, if possible, consensus in an international and interprofessional sense on the more frequently used concepts in the field of mental health." It is difficult, however, to believe that these two essays will do much towards achieving this laudable aim. They are the product of an unspecified number of conferences and "communications" between members of the Scientific Committee and their correspondents in different countries of the world.

"Identity" and "mental health" have been singled out as concepts which are not only frequently used but also "emerging." From internal evidence this epithet appears to mean that their use is untrammelled by any consistency or clear definition of meaning. The reader is first directed to a seemingly arbitrary selection of references to writings on identity ranging from a 1956 paper by Erik Erikson to "the seventeenth century writings of John Donne." He may well take warning from the candid admission on page 3 that the collective authors began by trying to reach agreement upon what it was they were talking about, but "after quite prolonged discussion, which was for the members of the Committee a most illuminating and educative experience, a unified convention of use could not be found for any of these terms."

The larger section of the book, devoted to mental health, is embarrassing in its scope, which includes thumbnail précis of the values inherent in all of the great religions and several of the major cultures of the world. In this, as in the earlier section, the Committee's inability to define their subject-matter is only too apparent; it is to be regretted that they have not been equally successful in conveying the "illuminating and educative" aspects of their deliberations. And yet, the problem confronted here is a most important one: the antithesis of current "mental health" ideology (a by-product of twentieth-century Western middle-class values) and the values of older, but rapidly changing, societies. This is a theme which deserves serious consideration, and the present study, though at times confused and often exasperating, is also thought-provoking.

It concludes with three pages of sober, sensible reflections on the training of personnel for mental health work in developing countries—and this, perhaps, is its real contribution to World Mental Health Year.

G. M. CARSTAIRS.

GENEVA PAEDIATRIC CONGRESS

XIIIème Congrès de l'Association des Pédiatres de Langue Française, Mai, 1961, à Genève. Edited by F. Bamatter and A. Mégevand. Four volumes. I: *Les hypothyroïdes.* (Pp. 311+xvi; illustrated. Sw. Fr. 48.) II: *Les abiotrophies neuro-rétiennes.* (Pp. 396+xvi; illustrated. Sw. Fr. 61.) III: *Les affections à virus du tractus respiratoire.* (Pp. 226+xvi; illustrated. Sw. Fr. 36.) IV: *Communications.* (Pp. 152+xvi; illustrated. Sw. Fr. 20.) Basel, New York: S. Karger. 1961.

This publication of the proceedings of the eighteenth congress of the French-speaking Association of Paediatricians, held in Geneva in May of this year under the presidency of Professor Bamatter, is very good indeed. It is a tribute to the editors, Professor Bamatter and Dr. Mégevand, and to the publishers that it has appeared so promptly. There are three very well-produced and bound books and a fourth "soft cover" complementary volume.

The first three volumes contain dissertations on the main themes of the congress: hypothyroidism; paediatric neuro-retinal abiotrophies and the phacomatoses; and virus infections of the respiratory tract. The fourth volume consists of 46 communications presented at the congress.

Volume I is concerned with the recent advances in knowledge of the physiology and function of the thyroid hormones, developmental and inflammatory lesions of the thyroid, skeletal anomalies, genetic studies, the signs of iodine lack in infancy, and endemic cretinism.

Volume II contains sections on the clinical, genetic, ophthalmological, otological, and electroencephalographic aspects of such conditions as the cerebral lipoidoses, Schilder's disease, and the leucodystrophies. Under "phacomatosis" are included tuberous sclerosis, von Recklinghausen's disease, Sturge-Weber's syndrome, Hippel-Lindau's disease, and other eponymous rarities, with an excellent general neuropathological summing-up by Professor van Bogaert.

Volume III is devoted to the respiratory viruses, which are discussed from the immunological, epidemiological, clinical, radiological, and anatomo-pathological aspects. This volume is likely to have the widest appeal because of its practical importance. It is completely up to date and full of the most valuable information, particularly in the chapter by Professor Breton and his colleagues in Lille. Endocrinologists will find good value in Volume I and neurologists will appreciate Volume II.

Each chapter has an extensive bibliography and there are many excellent photographs, radiographs, and tables, including two beautiful colour plates. The production is of a high standard throughout and the editors and contributors are to be warmly congratulated. As Professor Bamatter says at the end of his preface, "The presentation of these volumes is impeccable."

WILFRID GAISFORD.

PICK OUT YOUR ANSWER

Multiple-Choice Examinations in Medicine. A Guide for Examiner and Examinee. By John P. Hubbard, M.D., and William V. Clemans, Ph.D. (Pp. 186. 28s.) London: Henry Kimpton. 1961.

This book gives a very fair account of the experience of the National Board of Medical Examiners in the U.S.A. in designing and assessing multiple-choice examinations.

The authors discuss the purpose and types of such examinations, the construction of the questions, the method of scoring, and the analysis of the tests. The chapter on a comparison of the multiple-choice examination and the essay type of question deserves close study by those who are uncommitted in their views. Many examiners in this country might agree that the assessment of factual knowledge and the power of recall is better done by the multiple-choice type of examination. The authors quote the differing opinions of two National Board examiners on the comparative value of these two methods. One of them regards the multiple-choice examination as superior to the essay type of examination from every point of view; the other thinks it an inadequate method and pernicious in its influence on medical education when used as the sole means for estimating attainment, since it tests only one aspect of scholarship.

Examiners intending to experiment with the multiple-choice questions will find this book invaluable. The construction of the questions, as is now well understood, requires as much time as, and more thought than, the marking of a large set of essay papers. For a two-hour examination 170 to 250 questions are required, and 111 to 129 correct responses to 170 questions represents an average performance. A sample examination is given in an appendix so that physicians may fully understand the method, test their own knowledge, and discover how often their experience leads them to question the opinions of other experts. They will discover, too, how far gamesmanship may contribute to the finding of the correct answers. Intending examinees may learn from this book what will ultimately be required of them.

Perhaps a fair summary of the value of these methods is given by the authors themselves: "Test scores are one kind of data to be placed alongside other kinds of data. The test score is a highly useful addition to other data but should not replace them."

D. V. HUBBLE.

FAT METABOLISM

Lipide Metabolism. Edited by Konrad Bloch. (Pp. 411. 84s.) New York, London: John Wiley & Sons Inc. 1961.

This valuable book follows current practice in consisting of a number of separate chapters all contributed by well-known authorities on the subject. Dr. Konrad Bloch is to be congratulated on his choice of contributors, who include F. Asselineau, Bent Borgstrom, David E. Green, Morris Kates, Robert G. Langdon, E. Lederer, James F. Mead, R. J. Rossiter, B. Samuelsson, K. P. Strickland, and Salih J. Wakil. The subjects dealt with cover an extremely wide field, but as purely clinical chemistry is excluded this is a book for the biochemist or biochemical physician rather than the pure clinician. In view of the editor's past interests it is perhaps surprising to find no chapter specially devoted to cholesterol metabolism, though there are some references to this subject in the chapter from Professor Borgstrom's department on bile acids. The spelling of "lipide" is unexpected and creates a pleasing impression of individuality.

All the chapters reach such a high standard that any comparison would be invidious, but one may mention particularly the admirable review of the digestion and absorption of glycerides, which puts the subject well into perspective. Current theories on atheroma also give particular interest to the chapters on unsaturated fatty acids and on phosphatides, which are also very readable. The other chapters are concerned with enzymatic mechanisms, lipolytic enzymes, hormonal regulation of fatty acid metabolism, and bacterial lipids.

This book appears at a very appropriate time in view of the mass of new work on fat metabolism appearing each week and will be obligatory reading for all working in this field.

N. F. MACLAGAN.

NEUROGENIC OSTEOARTHROPATHY

Les Ostéo-Arthropathies Nerveuses. By A. M. Recordier, P. Mouren, and G. Serratrice. (Pp. 167; illustrated. 28 NF.) Paris: Expansion Scientifique Française. 1961.

In these days of rapid transport and space travel insularity is a feature not of islands—those convenient ports of international call—but of the large land masses. This monograph on neurogenic osteoarthropathy illustrates well some of the most noticeable hereditary virtues and vices of French medical writers. First, it concerns an obscure subject and is dealt with lucidly. It will be welcomed by neurologists, radiologists, and rheumatologists as filling (partially) a long-felt need. Secondly, it exploits to the full the French gift for clinical description. Indeed, the majority of contributions in this field have been in the French tongue, so that it is not surprising that almost three-quarters of the listed references are French. However—another Gallic habit—the majority of textual references are not detailed at all in the extensive bibliography, many names are

misspelt, and those that are listed are chaotically referenced. Thirdly, it is mainly a review article and original data are few. There are two case histories and some original radiographs (not referred to in the text); the authors' place of work is left to be inferred from a passing reference to the first author as contributing to two theses from Marseilles.

Notwithstanding these criticisms, this is a useful publication. Its eight chapters concern the validity of the concept of neurogenic osteoarthropathy; tabetic osteoarthropathy; syringomyelic osteoarthropathy; Thevenaud's syndrome and other types of acro-osteolysis; diabetic and leprous osteoarthropathy; para-articular calcification in paraplegia; shoulder–hand syndrome, Sudeck's atrophy, post-herpetic syndrome; osteoarthropathy of hemiplegia, of Parkinsonism, of congenital indifference to pain.

These are all rare and ill-understood conditions, and a French review of a field in which so many contributions have been in French is a very worthwhile acquisition. There is a preface by Professor van Bogaert, of Belgium, well known for his contributions in this field.

E. G. L. BYWATERS.

CLINICAL ORTHOPAEDICS

Clinical Orthopaedics. Editor: Anthony F. DePalma. No. 18. (Pp. 293+ix; illustrated. 60s.) Philadelphia and Montreal: J. B. Lippincott Company. 1961.

This collection of essays, half of which is an invited symposium upon internal derangements of the knee and half made up of occasional papers, is one of a series prepared "under the auspices of the Association of Bone and Joint Surgeons" and is an "official publication of the American Fracture Association." The symposium, while containing some very good articles on arthrodesis of the knee, ligamentous injuries, lesions of the patello-femoral joint, prosthetic replacement of "tibial plateau" fractures, osteochondritis, popliteal cysts, and below-knee amputations, has relatively little to say on the subject of meniscal causes of derangement, a subject which deserves a full-scale presentation in such a work. It is true that errors in diagnosis and meniscal lesions in childhood are discussed.

The articles in the second half are a mixed bag. There is a considerable study of long-term results and the errors of diagnosis in intervertebral disk surgery, given with a description of the formidable extraperitoneal approach to the lumbosacral disk from in front; the author (Paul H. Harmon) has done 450 such operations in 12 years. The remaining articles range over a wide field.

Though some of the articles have the appearance of unedited dictations the production is excellent and the illustrations are of a high standard.

NORMAN CAPENER.

BRAIN MECHANISMS

Brain Mechanisms and Learning. A Symposium organized by the Council for International Organizations of Medical Sciences. Established under the joint auspices of Unesco and W.H.O. Consulting editors: A. Fessard, R. W. Gerard, and J. Konorski. Foreword by J. F. Delafresnaye. (Pp. 702 +xiv; illustrated. 70s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1961.

This book contains papers read at a symposium held in Montevideo in 1959. It also contains an account of some of the discussion which took place. There is a bibliography, an inadequate subject index, and no author index. The roll of contributors is extremely impressive and contains nearly all the names—American, Russian, European, and South American—which would occur immediately to the reader on seeing the theme of *Brain Mechanisms and Learning.* The book is beautifully produced, reasonably priced, and indispensable to psychologists, physiologists, and psychiatrists. The standard of the papers is very high indeed, and the discussions between lecturer and listeners also achieve an unusually high level.

It would be impertinent of the reviewer to criticize the experiments and theories advanced by the contributors, but he would like to draw attention to two points. The first of these is the great interest we must attach to the contributions of the Russian speakers. It is not so much that their work is in any sense better experimentally than the rest, but simply that it seems to come from a theoretical background different from that of most other contributors. To have the Russians in such a symposium, exchanging views with experts from other countries, is an extremely useful and beneficial exercise, whatever the ultimate value of their contribution may be.

The second point relates to the complete absence of theorists of modern learning—both in person and in spirit. The names of Hull, Tolman, and Thorndike are not even mentioned in the bibliography, and none of their disciples appears among the authors. Even granted that the main emphasis of the symposium was on brain mechanisms rather than on learning, it still appears that one-sidedness has been carried a little too far. At some stage a bridge will have to be built, and to discuss learning in the absence of practically all the large group of psychologists principally concerned with this topic strikes a discordant note.

H. J. EYSENCK.

MARRIAGE

Marriage: East and West. By David and Vera Mace. (Pp. 352. 30s.) London: Macgibbon and Kee. 1960.

Dr. and Mrs. Mace have unrivalled experience of the Marriage Guidance Movement in London and in the United States. To this they have added four visits to Asia, where they studied the institution of marriage and the place accorded to women in the tradition implicit in Hindu, Buddhist, and Confucian religion and philosophy.

A "complex of misunderstanding" exists in the West about the East and in the East about the West, and the aim in this book is to provide enlightenment about one important topic—the relationship between men and women in each group. Bearing in mind that Eastern and Western cultures are in a state of transition the authors have tackled a difficult problem with skill and sensitivity. Western readers will learn a great deal about the role of women in the East, and erroneous ideas prevalent in Eastern countries about Western marriage customs will be corrected. Whether this will have any bearing on the tensions between peoples of the East and West may be doubted.

Arranged marriages strike a chill note in Western minds, yet these marriages "work" very well. The custom rests on the belief that fate has ordained "one certain man for each woman." "It can be safely

assumed that every second Indian believes in astrology. . . . Horoscope-agreement must precede match-making in most Hindu marriages." Statements of this type are provided in abundance, but from them it would be rash to draw conclusions. Indeed the authors make it plain that the book is based for the most part on impressions gained chiefly from informed persons in the countries concerned. Unfortunately Dr. and Mrs. Mace were not able to cross the frontier of Communist China, but they have collected and now present a substantial amount of well-attested information about marriage and family life under the Communist regime.

E. A. BENNET.

SCOTTISH DOCTOR

A Doctor Remembers. By Kenneth Fraser, M.D. (Pp. 175; illustrated. 12s. 6d.) Dumfries: Robert Dinwiddie and Co. Ltd. 1961.

The author of this book of reminiscences has lived an interesting and useful life, and here relates many of his experiences as a son of the manse, as medical student and houseman at Edinburgh, as ship's medical officer, as medical officer in the R.A.M.C. during the war of 1914–18, and as Assistant Medical Officer and later County Medical Officer for Cumberland. The incidents he recounts are interspersed with many good stories, and he is certainly brave to tell many which are against himself, especially the almost incredible practical joke related on pages 162 and 163.

If a second edition were called for we would ask the author to consider expanding the last chapter, which deals with his forty-four years' work in the health service. It would be of great historical interest to have a detailed and authentic account of the impact upon a country district of the unprecedented changes in the public health services during the last fifty years. Some other parts of the book could easily be spared to provide more room for such a first-hand account.

A few wartime poems are added at the end; I liked best the two quatrains on "Big Ben."

ZACHARY COPE.

COAGULATION INHIBITORS

Les Inhibiteurs Normaux et Pathologiques de la Coagulation Sanguine. By Roger Masure. Preface by P. Lambin. (Pp. 284. No price.) Brussels: Editions Arscia. Paris: Masson et Cie. 1960.

In this book the literature on natural inhibitors of blood coagulation is reviewed. Following this there is an experimental study of inhibitors in normal blood and of inhibitors in the blood of patients with various haemorrhagic states. The author presents evidence for the presence in normal blood of a heparin-like anticoagulant and studies anticoagulants in the blood of many haemophilic and other types of patient.

The approach is more experimental than critical and will be of interest only to those actively engaged in the study of coagulation inhibitors. For these workers the wealth of new experimental evidence produced in this book is invaluable. For the general physician and pathologist not actively engaged on coagulation research the book is too specialized and will not provide the concise summary of available evidence that such readers might desire.

ROSEMARY BIGGS.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received.

Recent Progress in Hormone Research. The Proceedings of the 1960 Laurentian Hormone Conference. By Gregory Pincus. Volume XVII. (Pp. 600+viii; illustrated. £5.) New York and London: Academic Press. 1961.

The Human Adrenal Gland. By Louis J. Soffer, M.D., F.A.C.P., Ralph I. Dorfman, Ph.D., and J. Lester Gabrilove, M.D., F.A.C.P. (Pp. 591; illustrated. £6 18s. 6d.) London: Henry Kimpton. 1961.

Six Disciples of Florence Nightingale. By Zachary Cope, Kt. (Pp. 76; illustrated. 15s.) London: Pitman Medical Publishing Co. Ltd. 1961.

Koronarverschlus Klinische Beiträge zur Ätiologie und Pathogenese. By Dr. H. H. Berg. (Pp. 169. No price.) Stuttgart: Georg Thieme Verlag. 1961.

Klinische Chirurgie für die Praxis. By Professor Dr. med. O. Diebold, Professor Dr. med. H. Junghanns, and Professor Dr. med. L. Zukschwerdt. (Pp. 949; illustrated. No price.) Stuttgart: Georg Thieme Verlag. 1961.

La Maladie Ulcéreuse de l'Estomac. By Guy Albot and Felix Poilleux. (Pp. 289; illustrated. 42 NF.) Paris: Masson et Cie. 1961.

Treatment of Pulmonary Tuberculosis. By Japan Anti-Tuberculosis Association. (Pp. 59; illustrated. No price.) Tokyo: Kanda Misaki-cho, Chiyoda-ku. 1961.

Proceedings of the Seventh International Conference of the International Society of Geographical Pathology. Eclampsia and Pre-Eclampsia in Pregnancy. By F. C. Roulet, M.D. (Pp. 729; illustrated. 45 Fr.) New York, Basle: S. Karger AG. 1961.

Proceedings of the Academy of Medical Sciences. Report on the Recent Developments in the Fields of Public Health and Medical Education. By Dr. K. N. Rao, M.D. Vol. 1. (Pp. 44+xxxii. No price.) India: Academy of Medical Sciences. 1961.

Introduction to Anesthesia. The Principles of Safe Practice. By Robert D. Dripps, M.D., James E. Eckenhoff, M.D., Leroy D. Vandam, M.D. Second edition. (Pp. 413+xi; illustrated. 56s.) Philadelphia and London: W. B. Saunders Company. 1961.

Progress in Experimental Tumor Research. Edited by F. Homburger. Vol. 2. (Pp. 386+xiii; illustrated. 72 Fr.) New York, Basle: S. Karger. 1961.

Thoracic Diseases. Emphasizing Cardiopulmonary Relationships. By Eli H. Rubin, M.D., F.A.C.P., F.C.C.P., and Morris Rubin, M.D., F.A.C.S., F.C.C.P. Association with George C. Leiner, M.D., F.A.C.P., F.A.C.C., and Doris J. W. Escher, M.D. (Pp. 968+xviii; illustrated. £8 15s.) Philadelphia and London: W. B. Saunders Company. 1961.

Mechanisms of Disease. An Introduction to Pathology. By Ruy Perez-Tamayo, M.D. (Pp. 512+vii; illustrated. 98s.) Philadelphia and London: W. B. Saunders Company. 1961.

Common Sense About Marriage. By Clarice McNamara and Jean Newcomb. (Pp. 124+viii. 10s. 6d.) London: Macmillan and Co. Ltd. 1961.

Pathology. By W. A. D. Anderson, M.A., M.D., F.A.C.P., F.C.A.P. Fourth edition. (Pp. 1,389; illustrated. £6 15s.) New York: C. V. Mosby Co. 1961.

Influenze Neuro-Endocrine nella Flogosi Gastro-Duodeno-Biliare Aspecifica. By Domenico Scopinaro and Giulio Ciordano. (Pp. 204; illustrated. No price.) Genova: Stab. Tip. Alessandro Pesce-Eredi. 1960.

Personality and Social Interaction. By Robert H. Dalton. (Pp. 381+vii; 48s.) Boston: D. C. Heath and Company. 1961.

The Organization from Within. A Comparative Study of Social Institutions based on a Sociotherapeutic Approach. By Cyril Sofer. (Pp. 178+xiii; illustrated. 25s.) London: Tavistock Publications. 1961.

Chemical Control of Insects. By T. F. West, D.Sc., Ph.D. (Lond.), A.M.I.Chem.E., F.R.I.C., and J. Eliot Hardy, D.Sc. (Prague), M.A.(Cantab.), F.R.E.S. Second edition. (Pp. 206+ix; illustrated. 50s.) London: Chapman and Hall Ltd. 1961.

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FIFTY YEARS ON

On December 16, 1911, Lloyd George's National Health Insurance Bill received the royal assent. The Bill became an Act, but the act had yet to be performed. The appointed day from which its provisions were to be fully applied was January 15, 1913. The King's speech had anticipated "with confidence that the operation of this measure, while fortifying existing inducements to thrift and self-reliance, will do much to alleviate misery and to check disease among those whose social conditions it is designed to ameliorate."[1] Confidence thus publicly displayed was far from being felt privately. The doctors, without whom the scheme could not work, were still in a ferment of revolt against it. Although the German system of social insurance was there as an example social legislation of this magnitude was entirely new to this country. Somehow administrators with no precedent to follow had to improvise machinery that would secure the imposition by law of personal duties of a novel kind on some fifteen million people—workers, employers, approved society officials, and doctors.[2] It is now a matter of history that the necessary administrative machinery was devised in time and that two days after the appointed day a special Representative Meeting of the B.M.A. decided to release doctors from their pledges not to serve under the Act. It is a matter of fact that the system of general practice that emerged from the Lloyd George scheme carried on into the National Health Service and is basically the same now as it was 50 years ago.

The National Health Insurance Act provided for the compulsory insurance on a contributory basis for all men and women aged 16 to 70 who were employed under a contract of service. Subject to an income limit of £160, those who were wholly or mainly dependent for their livelihood on some regular occupation could contribute voluntarily at their own expense and claim benefits. The contributions for employed persons (7d. a week for men and 6d. for women) were paid partly by the employee and partly by the employer and the State added 2d. In return the main benefits were a weekly sickness payment and such medical attendance, treatment, and medicine as would normally be provided by a general practitioner. Medical benefits were administered by newly created local insurance committees, one for each county and county borough (the predecessors of the present local executive councils), and the sickness benefits by approved societies. Centrally there was an insurance commission for each of the four parts of the United Kingdom (which then included Ireland) and a National Insurance Trust Committee consisting of representatives of all four commissions and the Minister as chairman to co-ordinate policy and procedure.

Medical opposition to the National Insurance Bill in the form in which it was first introduced was no mere matter of a conservative profession hidebound by tradition reacting to preserve its entrenched positions. The opposite was the case. With the B.M.A.'s own revolution at the turn of the century behind it and its new democratic constitution of 1902 in working order those general practitioners who had suffered most in the past from the evils of contract practice in poor districts were in a position to press for their own reforms. The Representative Meeting in 1905 adopted a report[3] on the subject. There were districts, it said, where contract practice was necessary, and the medical profession was the best judge of who should be entitled to such a "concession." It "should be arranged by and under the control of the medical profession itself." This was an organized move to free doctors from the domination of the friendly societies and to make contract practice a reputable business. The medical profession was intent on ridding itself of its own depressed class. This report was followed by another[4] in 1910 which set out for discussion by B.M.A. Divisions the principles on which medical attendance should be organized on the provident or insurance principle. Readers were reminded that the defects of existing contract practice arose from lay control, individual bargaining by medical practitioners, and the employment of selected medical officers; and that it was already Association policy that reform must be based on (1) throwing work open to all reputable doctors, with choice of doctor by patients, (2) management by medical committees, and (3) approval of rules by the local organization of the profession.

Events, in the shape of Lloyd George's Bill, caught up with the B.M.A. before its members could

[1] *Brit. med. J.*, 1911, 2, 1666.
[2] *Lloyd George's Ambulance Wagon, The Memoirs of W. J. Braithwaite*, edited by H. N. Bunbury, 1957. Methuen, London.
[3] *Brit. med. J., Special Suppl.*, July 22, 1905.
[4] Ibid., 1910, 1, 82
[5] Vaughan, P., *Doctors Commons*, 1959. Heinemann, London.
[6] *Brit. med. J.*, 1911, 2, 181.
[7] *Lancet*, 1911, 2, 1344.

complete their discussions on the Council's report. Nevertheless, when the Bill was published in May, 1911, the B.M.A. had on record a wealth of documented opinion and policy on medical services and a membership of 25,000—over 50% of the 40,000 or so doctors practising in the British Isles—to support it. The B.M.A. needed all the strength it could muster. Without consulting the doctors, but, as it later transpired, after much discussion with the friendly societies, the Government proposed that the medical benefits were to be administered by the friendly societies, the trade unions, and the larger insurance companies, to be known collectively as approved societies. The societies were to decide which doctor treated which patient. The doctors were to have no representation on the administrative bodies and thus no say in the conduct of the scheme. They were simply to be the hacks of the service.[5] There was no doubt that the Government thought of them as such, in so far as they had thought of them at all. The reaction of the doctors to this move to put them firmly and finally into the clutches of the societies from which they were endeavouring to escape was one of extreme anger. The so far untried B.M.A. medico-political machine was galvanized into action and the details of the ensuing battle are there for all who care to thread their way through the voluminous records of it in the medical literature of the time. The profession gained most of its points and jolted surprised politicians into a realization that here was a body of people which had to be reckoned with—a realization that was not to fade.

At this distance of time it is possible to arrive at a dispassionate assessment of what doctors in 1911 achieved for their successors. Whether they lost or won the fight is still a matter of debate. They lost on their demand for an income limit of £2 a week for those eligible for benefit, and they lost on the question of how much the capitation fee should be. Both of these are of mere academic interest now. They won the principle of free choice of doctor and doctor of patient. They rid themselves of the yoke of the friendly societies, and they won a measure of representation on the various administrative bodies working the Act. What they won is highly prized to-day. The issue of the method of payment was never seriously fought. In its efforts to reform contract practice the B.M.A. was concerned not so much with changing from the capitation system to an item-for-service payment but with ensuring that the capitation fee was adequate and uniform. It pointed out[4] that "no system of payment per attendance combined with medical control of management had yet been devised." The time had not arrived for a medical service for everybody. The Royal College of Physicians was forthright about the capitation fee.[6] A system of per capita contract practice, it stated, "if universal among the working classes, would lower the standard of medical practice and would be injurious to the public and the profession." The *Lancet* also campaigned against the capitation fee. It noted[7] a strong feeling of resentment against payment by this method instead of "upon the principle of work done." There are those who may agree and who may think that one of the most important battles which the B.M.A. could have fought in 1911 was never fought at all.

SEXUAL ASSAULTS ON CHILDREN

For thirty-five years, since the report[1] of the Departmental Committee on Sexual Offences Against Young Persons, doctors and others concerned with child welfare have felt that the legal procedure by which child victims of sexual and other assaults, or child witnesses, are required to give evidence in adult courts, and especially higher courts, is unsatisfactory, for too little attention is paid to the needs of children. A joint committee[2] of the B.M.A. and Magistrates' Association, under the chairmanship of Dr. Doris Odlum, raised the question again in 1949, and earlier this year correspondence in *The Times* showed that there is now widespread public demand for minimizing the ordeal of the child victim in court. In a symposium in this issue of the *Journal* a lawyer, a juvenile court magistrate, and a doctor deal with the various difficulties and possible solutions. From their remarks it can be seen that contrast between the special provisions made for delinquents in the juvenile courts—to be further extended if the recommendations of the Ingleby Committee[3] are accepted—and the lack of provision for the child victim in the adult courts is becoming more marked than ever.

That the problem remains unsolved is mainly due to the undoubted difficulty of reconciling medical and legal requirements, but perhaps there is also a feeling that reform is not an urgent necessity. Lawyers and magistrates who find present arrangements unsatisfactory naturally tend to emphasize the events in court—the awe-inspiring formality of procedure, the repetition of painful events, and cross-examination possibly even by the assailant himself. But for the doctor or psychologist less obvious features are more important.

[1] *Report of the Departmental Committee on Sexual Offences Against Young Persons*, 1926. H.M.S.O., London.
[2] *The Criminal Law and Sexual Offenders*, 1949. B.M.A., London.
[3] Home Office *Report of the Committee on Children and Young Persons*, 1960. H.M.S.O., London.
[4] Reifer, D., *J. crim. Law and Criminol.*, 1958, **49**, 222.

In many cases the most traumatic aspects of the assault are the unaccountable change of attitude in some of the parents, the interrogations and physical examinations, and the repetitions and rehearsals, perhaps lasting for weeks or months, which precede appearance in court. Even more important, especially in older children, is the painful and confusing process of learning to look at the offence and the offender through adult eyes. There may also be a sense of guilt about the extent to which participation was willing. Local publicity may be so great that a convalescent holiday has to be arranged which the child often interprets as a punishment. Advising parents how to minimize the effect is an important part of prophylaxis, and this valuable work is often undertaken, with too little recognition and public support, by such voluntary agencies as the Federation of Committees for the Moral Welfare of Children, or by the welfare officers of local authorities.

What is medically desirable is easily stated: A single careful statement taken by an experienced officer, a physical examination, and thereafter as little participation by the child as possible in any subsequent events. This has been largely achieved by the new law in Israel, referred to in his article by Sir Basil Henriques, whose death earlier this month is deeply regretted by the medical profession, with which, as a distinguished magistrate of a juvenile court, he was always ready to co-operate. The scheme in Israel provides for the appointment of a trained and experienced social worker—a "youth examiner"—who is solely responsible for interviewing the child and advising the parents.[4] He has the right to decide whether any child of 14 or less shall be allowed to give evidence. If he decides against it his evidence can be accepted by the court in place of the child's. In practice about 60% of victims are under 10, and 10% of these are considered fit to attend court; 40% are aged 10 to 14, and 35% of these are allowed to give evidence. The effect is that a large number of offenders are brought to court in Israel, but a rather high proportion are acquitted because the examiner is naturally extremely cautious in interpreting the child's evidence. By contrast, the British system assures the highest standards of proof of guilt, but does not protect the child; moreover, many offenders are not reported because the thoughtful parent is reluctant to expose the child to further strain.

A radical reform on the lines of the system in Israel raises formidable legal difficulties, especially in interfering with the fundamental right of the offender to defend himself. Many children invent elaborate and circumstantial fantasies about assault, especially in incest cases, and the greatest care is certainly necessary. But it seems questionable whether the well-tried procedure of examination and cross-examination before a jury is as successful in reaching the truth in the child witnesses as with adults. After two or three months' delay, with frequent repetitions, memory becomes stereotyped; and the jury unfamiliar with such extraordinary offences may find the facts difficult to believe.

The contributors to the symposium suggest many alterations in procedure which might be possible administratively and with only minor alterations of law. Other solutions have sometimes been suggested. If more cases could be dealt with by magistrates' courts procedure would be simplified and speeded up. The Departmental Committee of 1926 recommended such a change in law, feeling that magistrates rather than juries were more likely to sift the truth. The Joint Committee of the B.M.A. and Magistrates' Association recommended that those cases coming before a high court should be tried by a judge (or chairman of sessions) sitting with two juvenile court magistrates without a jury. The Criminal Justice Administration Bill now before Parliament may afford some relief by aiming to reduce the delay before a case comes before the higher courts. It also provides for some changes in jurisdiction in some sexual offences, allowing a wider range of cases of indecent assault to be dealt with by magistrates. Consideration for the child victim, however, might have led to an extension of the list of offences triable by magistrates, or of those offenders with whom magistrates felt they had powers to deal. Many cases which need to go to Assizes end with sentences which are within the scope of the magistrates. Dr. Nesta Wells, as medical contributor to the symposium, rightly discusses the treatment of the offender as well as the welfare of the child victim, and it may be that the present difficulties in relation to the victim will be resolved only when more flexible methods of managing both the offender and his victim are devised.

THE TUBERCULOUS IMMIGRANT

The Council last week (see *Supplement*, p. 254) passed three resolutions designed to control the entry into Britain of tuberculous immigrants. It had before it a letter from the Ministry of Health in reply to a resolution of the Annual Representative Meeting that all immigrants should have an *x*-ray examination of the chest on arrival in Britain. The letter beat all records for ministerial evasion. In forceful contrast the Council also had before it the

comments and recommendations of the Tuberculosis and Diseases of the Chest Group Committee. The comments were as follows:

1. The Association has repeatedly warned the Government of the dangers to the health of the community which result from unrestricted immigration.

2. It can be confidently predicted that tuberculosis would be completely eradicated in this country if it were not for the unrestricted importation of infectious cases.

3. The incidence of active pulmonary tuberculosis in this country as shown by mass radiography surveys is less than 1 per 1,000 of the population. In West Indian immigrants the incidence appears to be much the same. Asian immigrants show at least 25 cases of active pulmonary tuberculosis per 1,000.

4. The most recent estimates from the Home Office show a steep rise in Asian immigrants since 1959. During the first eight months of 1961 there were 26,700 immigrants from India and Pakistan. At this rate we may expect about 40,000 immigrants from these countries in the next twelve months and, therefore, about 1,000 cases of active pulmonary tuberculosis. There is a further risk that some of these cases may be infected with a resistant strain of organism resulting from incomplete treatment in their own country.

The Council resolved to forward to the Ministry recommendations that no immigrants should be admitted to the country without compulsory *x*-ray examination at the port of entry, and that anyone found to have active tuberculosis who refused treatment should not be allowed to remain in the country.

Among the so-called reasons given by the Ministry of Health for not carrying out *x*-ray examination of immigrants' chests was the following: "There is also the general objection that a system of this kind, if applied only to Commonwealth immigrants, would result in an invidious distinction being drawn between them and aliens who are not subjected to any such requirements." Does the Ministry of Health not think it invidious to expose to risk of tuberculous infection those natives of Britain among whom and with whom the immigrants will live and work?

The Ministry of Health had to take a lesson from Canada in the control of diphtheria. It had now better go to the same school to learn something about the control of tuberculosis.

"British subjects by birth in the United Kingdom, Australia, New Zealand, or the Union of South Africa, or citizens of Ireland born in Ireland" have to be medically examined if they wish to take up permanent residence in Canada. The Canadian Government provides for such emigrants at certain centres in Britain free medical examination, including free *x*-ray examination of the chest for everyone aged 11 years and over. A roster of authorized doctors are available in other parts of the country to make similar examinations. British subjects must take to the "roster doctor" an identity card with a photograph securely affixed, an *x*-ray film of the chest and radiologist's report—and enough to pay the doctor's fee.

And so in Britain to-day we see that Commonwealth governments are taking every care to see that British emigrants from our shores are healthy, while our own Government, tied up in its own red tape, fails to take steps to exclude the tuberculous immigrant.

DISCOURAGING SMOKING

This year at least 19,000 men will die from cancer of the lung and 17,000 from chronic bronchitis. There is no doubt about the association between these conditions and tobacco smoking. It is reasonably certain that the relation is a causal one, and research into the pathology of it is beginning to show results.[1 2] Certainly the death roll would be substantially lower if we were a nation of non-smokers. Indeed it has been plausibly argued that in the absence of smoking four out of five cases of cancer of the lung and one out of two cases of chronic bronchitis would not occur.[3 4] There are therefore many better Christmas presents for a young person than a box of cigarettes that may push him along the road to habituation before he understands what its termination may be. Even medical students may be ill-informed about the association between smoking and disease, for J. P. Anderson[5] found that barely one-third of the medical schools in Britain had begun to give adequate instruction to students.

Attempts to explain the facts to the public have not so far given very encouraging results, though this may be an argument for intensifying rather than abandoning them. At the cost of £4,350 the health committee of the Edinburgh Corporation conducted an intensive health education campaign to bring home to the public the risks of cigarette smoking. Random samples of the population were interviewed before and six months after the campaign by a team from the university department of public health and social medicine.[6] Though three-quarters of those interviewed had been aware of the campaign it had had no measurable effect on their smoking habits. It did not even alter significantly the proportion who said they believed that smoking may cause cancer. Two out of every five smokers interviewed in Edinburgh said they would like to give up smoking if they could do so easily, but since an effective cure is not yet available we must ask whether anything can be done to discourage the development of addiction.

[1] *Brit. med. J.*, 1958, **1**, 1050.
[2] Ibid., 1961, **2**, 1134.
[3] Edwards, J. H., *Brit. J. prev. soc. Med.*, 1957, **11**, 10.
[4] College of General Practitioners, *Brit. med. J.*, 1961, **2**, 973.
[5] Anderson, J. P., *Manchester med. Gaz.*, 1961, **40**, 102.
[6] Cartwright, A., Martin, F. M., and Thomson, J. G., *Lancet*, 1960, **1**, 327.
[7] Jones, A. P., ibid., 1957, **1**, 631.
[8] Raven, R. W., ibid., 1957, **1**, 1139.
[9] Chave, S. P. W., Schilling, R. S. F., and Study Group, *Brit. J. prev. soc. Med.*, 1959, **13**, 1.
[10] Richards, H. J. A., and Crowdy, J. P., ibid., 1961, **15**, 84.
[11] Anderson, J. P., *Med. Offr*, 1961, **106**, 279.

One out of two boys has had some smoking experience before the age of 11 and one out of three is smoking regularly by the time he leaves school,[7–9] while a recent study of the smoking habits of young soldiers[10] indicates that the adult habit of confirmed smokers is fully established by the age of 17. If addiction is to be prevented this chain of events needs to be broken, and clearly the point at which the attempt should be made is at school. In his annual report for 1960 the principal school medical officer for Hertfordshire describes such an attempt. Two secondary modern schools with comparable social backgrounds were chosen for the experiment. One was subjected to a vigorous anti-smoking campaign; the other was used as a control. There was no difference in the smoking habits at the two schools at the beginning of the campaign—and there was no difference at the end.

By itself, therefore, health education at school is not likely to have much effect. Children persist with their tobacco experiments not for the pleasure they get out of them but as a matter of prestige, to assert their independence, to demonstrate their maturity, and in imitation of adults they know and admire. If smoking habits are to be changed health education will need to be combined with some measure of public control.[11] There is a strong case for curtailing tobacco advertisements (in Sweden they are forbidden). The law prohibiting the sale of cigarettes to children under 16 should be enforced. Facilities for smoking on public transport might be reduced and smoking in theatres and cinemas forbidden, and there is certainly no reason why the issue of cheap cigarettes to young Servicemen should continue.

SAFE TOYS

It might be thought that a toy destined for the hands of a young child should above all be safe. Unfortunately an investigation carried out by the Portsmouth Junior Chamber of Commerce[1 2] led this body to conclude that "a large proportion of children are faced with real danger at play." The danger is apt to be greater at Christmas than at other seasons because the shops are full of cheap toys of which at least some would be regarded as too shoddy to sell except to a public eager to spend. A new British Standard[3] to encourage the manufacture of safe toys is therefore welcome. It was prepared by a committee on which the B.M.A. was represented.

The extreme danger of celluloid is well known, and the British Standards Institution recommends a complete ban on this and similar inflammable materials for all toys. Non-poisonous paint and dyes are recommended, and materials should be so chosen and designed that sharp edges are not formed. Electric motors in toys should operate at not more than 20 volts, and if the current is taken off the mains it should go through a transformer made to specifications recommended by the B.S.I. In addition, "The committee noted in particular the risks, chiefly through swallowing and cutting, in certain toys, such as those sometimes found in crackers and those distributed as premium gifts with other goods. These recommendations apply with particular emphasis to toys of this kind." The good manufacturers have long been producing safe toys, but others have been less scrupulous. It is to be hoped that the publication of this standard, together with continuing education of the general public, will help to banish from the shops the kind of toys that cause too many tragic accidents.

[1] *Danger at Play.* A report on Toy Safety, and on Accidents to Children Attributable to Toys, National Affairs Committee of the Portsmouth Junior Chamber of Commerce. 1959.
[2] *Brit. med. J.*, 1959, **1**, 1173.
[3] *Code of Safety Requirements for Children's Toys and Playthings*, B.S. 3443, 1961, British Standards Institution.

LEGAL TOLERANCE FOR LEAD

On April 16, 1962, the Lead in Food Regulations will come into operation in England and Wales and we shall have our second "legal tolerance." The first was for arsenic under the Arsenic in Food Regulations, 1959. This does not mean that on April 17 much of our food will be condemned as unfit for human consumption or that analytical laboratories will be set up to test food coming over the border from Scotland. These regulations merely ratify a state of affairs which has existed for some time. They impose a maximal permissible content of lead in food of 2 parts per million (p.p.m.) except for a variety of specified exceptions which range from non-alcoholic beverages and wines (except vintage port) to onions (dehydrated). In the excepted foods the limit may be as low as 0.2 p.p.m. or as high as 50 p.p.m. These regulations are based on observations[1] which show that, to be safe over a lifetime, the average daily intake of lead must be less than 1.3 mg.

Many countries have long lists of "legal tolerances" covering all sorts of chemicals which can find their way into food. It may be wondered how we contrive to keep healthy with only two. It certainly does not mean that we care less about the purity of our food. The law can have as many "legal tolerances" as it likes, but unless certain criteria are fulfilled they will not protect the public. It is no use setting up a "legal tolerance" for a substance based on toxicological data and other considerations unless there are adequate analytical methods for testing foodstuffs and unless the trained people exist who can do this police work. Generally the institution of a code of practice for the use of toxic substances in agriculture, food storage, and manufacture offers the best safeguard to the consumer and this is the method of control usually adopted in Great Britain.

WELLCOME RESEARCH FELLOWSHIPS

The Wellcome Trust has this week announced its intention to help suitable medical graduates to embark upon careers of clinical research within the United Kingdom. Many young clinicians with research leanings are forced abroad to seek the opportunities they desire, and the establishment of the Wellcome Senior Research Fellowships in Clinical Science will ensure that some of them are not deprived of the chance to pursue research in Britain because there was no

[1] Kehoe, R. A., *Arch. environm. Hlth*, 1961, **2**, 418.

place for them in their university or medical school at the appropriate time. The Wellcome Trustees are to award one or two of these fellowships in 1962, and a limited number of further awards may be made in subsequent years.

The fellowships will normally be tenable for five years, and the stipend will begin at about £1,900 (at the age of 30 or thereabouts) and rise to £2,500. Direct personal applications for fellowships will not be considered, but the professors in charge of university departments of medicine, surgery, and obstetrics are being invited to put forward confidential nominations for these awards. There will be certain conditions they will be asked to accept connected with the possible later appointment of research fellows to suitable vacancies on the staff of a medical school. Until he obtains such a university post the research fellow will have the status and responsibilities of a lecturer in the university department in which he works.

Although this scheme will help only a few young clinicians to start a career in clinical research, it has the great advantage of giving the successful candidates a prolonged lift along the road they want to go. The Wellcome Trustees are to be congratulated on devising a practical way of helping both the promising young research worker and the medical school which might otherwise lose his services.

PLACEBO EFFECT OF OPERATION

Surgeons do not usually—or so physicians are apt to tell them—suffer unduly from the doubts and hesitancies imposed by an attitude of scientific scepticism. Yet some members of the craft do from time to time question whether the successful outcome of operation is entirely the result of surgical handicraft or whether it is in part due to what has been called the placebo effect.

The experienced medical man knows that every disorder of the soma makes its impact on the psyche, so it is reasonable to suppose that even in cases of gross organic disease the psychological effects of submitting to a stay in hospital may influence for better or worse the symptomatic cure. The relief of toothache at the dentist's door is not altogether a fiction, while the removal of a normal appendix has often given the patient genuine though temporary remission from ulcer dyspepsia. Nevertheless the idea that any great part of the success of operative treatment can be due to suggestion will strike most surgeons as odd. The problem is to disentangle all the factors which contribute to surgical success or failure. Take a case of peripheral arterial disease treated by lumbar sympathectomy. There is indisputable evidence of vascular dilatation with a rise of skin temperature, but the patient also claims relief from claudication pain, though, as we know, a sympathectomy has little or no effect on the muscle arteries. Has there been some indirect, obscure, but none the less objective change resulting from the sympathectomy? Is the improvement due to the anaesthetic, the medication, the compulsory stay in bed, or the mere passage of time? Must we admit a psychosomatic element? Or is it just that the patient is anxious to be helpful, anxious to justify in his own mind his decision to submit to operation, anxious to bolster his waning hope of restored health?

The position is still more confused when objective proof is claimed, for here observer error creeps in, and every good clinician with his patient's interests at heart is an unreliable observer, being biased towards optimism. Even so, claims still surpass credulity. Fabulous cures were attributed to caecopexy, nephropexy, and colectomy; more recently claims have been made for sympathectomy in hypertension and for all manner of operative procedures in the treatment of myocardial ischaemia. Perhaps the most fruitful field for placebo effects is the surgery of peptic ulcer. Here is a disease liable to spontaneous and quite unpredictable variations, where the symptoms and indeed the activity of the ulcer itself are conditioned largely by muscle tone and spasm. And here is a patient, often introspective and suggestible, who has suffered much and long, has tried many treatments, and been a sore trial to many doctors. At last after much mental turmoil he agrees to confide his health, his very life, to a surgeon. If the surgeon plays his part properly in the consulting-room the battle is half won long before the scalpel is brought to use. The good surgeon does not deride these adventitious aids to success; indeed, he should make use of them to the full. But their existence is worth bearing in mind when assessing the veritable results of the operative techniques.

CAMBRIDGE DEFEAT

By 522 votes to 205 the Regent House last week turned down the recommendation before it in favour of differential pay for clinical workers in Cambridge University.[1] By this act they have jeopardized the development of the school of clinical research and postgraduate medical teaching. A fly-sheet issued just before the ballot urging people to vote No included figures which suggested that 26 members of the medical staff looked after only 19 research students, as compared with 944 staff of the whole university looking after 1,241 research students.

In his report for 1959–60 the Regius Professor of Physic stated that during the year 51 postgraduates and eight senior medical students had enrolled for various courses; and it is worth noting that they included doctors and students from Australia, Hong Kong, India, New Zealand, Pakistan, and the U.S.A. Courses on haematology attracted an attendance of 113, on clinical aspects of nutrition 68. The fly-sheet, unintentionally we hope, suggested that the staff of the medical school must have quite a lot of time on their hands, with 26 of them looking after apparently only 19 students.

University squabbles and intrigues always present a sorry sight, even though they have inspired some of the excellent novels of C. P. Snow. Cambridge should aim at leading the world in clinical research instead of setting such a bad example of obscurantism.

[1] See previous editorial comment, *Brit. med. J.*, 1960, 2, 1579; 1961, 1, 419; 1961, 2, 1273.

SEXUAL ASSAULTS ON CHILDREN

Correspondence earlier this year in the national press, particularly in "The Times," showed that the public conscience is uneasy about the judicial ordeal to which the child victims of sexual assaults are often subjected. The time, it would seem, is ripe for an overhaul of the present procedure. The problem is in part medical, so we invited three expert contributors to appraise the situation and say how, in their view, the lot of these children could be eased.

In the first article Our Legal Correspondent briefly reviews present procedure, suggests some ways of reducing the ordeal, and discusses whether parents and doctors who refrain, for the sake of the child, from reporting an offence become themselves guilty of a crime. In the second article Sir Basil Henriques, who was for many years chairman of the East London Juvenile Court, goes more deeply into the reform of police and court procedure. Finally Dr. Nesta Wells discusses the medical aspects and the doctor's role in helping the assaulted child and her family.

I.—PRESENT PROCEDURE

BY

OUR LEGAL CORRESPONDENT

A person who commits a sexual offence against a child may be charged with one of a number of offences according to the gravity and nature of the offence. The mode of prosecution also varies with the offence.

Modes of Prosecution

Under the present law there are three modes of prosecution provided for offences of this type. First, there is trial on indictment at Assizes, the offence not being triable before Quarter Sessions. In this category fall the three felonies of rape, intercourse with a girl under 13, and buggery, and the misdemeanours of intercourse with a girl not under the age of 13 but under the age of 16, and incest by a man or a woman. The second mode of prosecution is on indictment at Assizes or Quarter Sessions, and in this category falls the misdemeanour of assault with intent to commit buggery. Lastly there are the misdemeanours of indecent assault on a man or boy and indecent assault on a woman or girl, which are triable on indictment before Assizes or Quarter Sessions, but which can be tried, *if the accused consents,* summarily before magistrates under the provision of section 19 of the Magistrates Courts Act, 1952. Where there is a summary trial under section 19, the maximum punishment is six months' imprisonment or a fine of £100 or both, as opposed to the maximum on indictment of 10 years' imprisonment for an assault on a male and two years for an assault on a female.

It is notable that it is only in the case of indecent assault that the law provides for trial other than by jury, and even in that instance the accused retains the right to insist on trial by jury: and that is a right which ought not to be taken away. Further, it is significant that Parliament in the Sexual Offences Act, 1956, maintained the principle that all the serious sexual charges should be tried before a "red" judge and jury at Assizes. Such charges are matters of extreme gravity both for the prisoner and for the prosecution witnesses and it is important for both that the conduct of the trial should be in the hands of the most skilled judge available. Trial before a High Court judge should also keep down the number of successful appeals founded on technical errors in the summing-up to the jury.

Reducing the Ordeal

If trial on indictment is not to be replaced by summary trial (and, as I have indicated, I think it ought not to be so replaced), how can it be made less of an ordeal for the child witness? The main criticisms of trial on indictment are that it takes place too long after the event, it involves too much repetition, and it is so solemn that it frightens the child.

Many lawyers have long felt that committal proceedings before the magistrates as a preliminary to trial on indictment are fraught with defects. This is not the place for renewing that debate in detail, but justice would surely be equally served if, instead of hearing the prosecution witnesses and cross-examining them at committal proceedings, the prisoner were simply given before the trial depositions sworn by the prosecution witnesses in private. In the case of a child witness that deposition could be the statement taken by the examining police officer, attested the same or following day before a commissioner for oaths. By eliminating committal proceedings with their tedious repetition of evidence, the delay before trial would necessarily be reduced. It could be further reduced by the simple administrative expedient of putting all sexual cases involving children to the top of the list of cases awaiting trial. Even under the present system it is possible that some delay might be eliminated by making greater use of the power granted by section 10 of the Magistrates Courts Act, 1952, to commit to an assize court in a different jurisdiction if the court to which committal would normally be made will not be held within one month.

There is no reason why a Court of Assize should not be authorized to sit without formality in a private room, though the press should be present to ensure that no system of "secret courts" arises. But it would be interesting to know whether the fear induced in a child by the solemnities of a trial at Assizes is balanced by any resultant desire to be especially truthful. Justice cannot be done to the accused unless he or his counsel has the opportunity of cross-examining prosecution witnesses at the trial, and probably it is also desirable that those witnesses should give their evidence-in-chief in person, and not by way of a written statement read out by someone else to the jury.

Misprision of Felony

Under the present system of trial, parents and family doctors are often tempted, for the sake of the child, to refrain from reporting sexual offences against a child. It is therefore of some importance to examine whether such failure to report a crime is itself a criminal neglect of duty. Such failure to report can only be criminal if it amounts to the crime of misprision of felony. There is no such crime as misprision of misdemeanour, so that failure to report a sexual crime of the sort under consideration can only be criminal if the crime not

reported constituted rape, intercourse with a girl under the age of 13, or buggery. The position where a doctor or parent fails to report the commission of one of these latter crimes is uncertain.

Until recently, it was thought that the crime of misprision of felony was practically obsolete, and the Court of Criminal Appeal had indicated that it ought probably to be confined to cases where the person accused of misprision benefited from the concealment.[1] The doctor or parent would, of course, not benefit personally from such a concealment. However, in 1959, Slade J. held[2] that the element of personal benefit need not be present for the crime to be committed. He defined misprision of felony as the concealment of knowledge of the commission of a felony which a reasonable person would regard as sufficiently serious to report to the police. It is not unlikely, however, that the Court of Criminal Appeal would overrule this decision by holding that some element of personal benefit is necessary to make misprision of felony criminal. But Slade J.'s decision is binding on courts of first instance until overruled, and there is thus some danger in failing to report those sexual crimes which amount to felonies.

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[1] R. *v.* Aberg, 1948, 2 K.B. 173.
[2] R. *v.* Wild and others, 1960, Crim. L.R. 117.

II.—A MAGISTRATE'S VIEW

BY

SIR BASIL HENRIQUES*
Formerly Chairman, East London Juvenile Court

In a written reply to Mr. Grimond on July 10, the Home Secretary stated that in 1958 there were in England and Wales 2,586 cases known to the police of unlawful sexual interference with girls between 13 and 16, and proceedings were taken against 684 persons. In 1960 the figures were 3,608 known cases (an increase of 1,022), and 883 persons were proceeded against (an increase of 199). With regard to unlawful sexual intercourse with girls under the age of 13, there were 257 known cases in 1958, with 108 prosecutions, and 232 in 1960 with 112 prosecutions. The prosecutions for Scotland were 10% and 27% of the known cases. Scotland has a further category of "lewd and libidinous practices towards children," and in 1960 there were 1,301 known cases with 466 prosecutions.

The discrepancy between the number of cases known to the police and the number of prosecutions is probably accounted for by two things: the difficulty of identification and the reluctance of parents to put their children through what may be the very long ordeal of the trial of the offender, which may take place three or four months after the alleged offence. Even when proceedings are taken, the present procedure very often results in the accused being found not guilty, as uncorroborated evidence by child witnesses may not convince the Bench beyond reasonable doubt that the defendant is guilty. This is especially true when there has been a long delay in the hearing of the case.

Fair Trial

It is absolutely essential that any change in the procedure must not result in the offender not receiving an absolutely fair trial. He must be safeguarded against mischievous, false, imaginary, or revengeful accusations. On the other hand it is equally essential that justice shall be done to the alleged offended child, and there is no question that the present procedure places the child at a great disadvantage.

It is as important that the case of a guilty man shall be proved as it is for the case against an innocent man to be dismissed. Those who commit sexual assaults, rape, or indecent exposure are very often people with perverted or subnormal minds who are likely to continue in their practices if they are not brought to trial, and the things they do may become increasingly degenerate. Trivial sexual assaults may eventually become rape or even murder if the perpetrators are not apprehended as early as possible.

Parents at present feel that less harm is likely to come to their child if no action is taken than for the child to have the incident firmly imprinted in its mind during the various stages of the trial of the offender. For the protection of other children, parents must somehow be made to feel that it is better to charge than to take no action. The following procedure might encourage them to do this:

What Might be Done

In most cases there would be no witnesses present at the time of the alleged assault. The exception would be if the assault were on a very young child in the presence of other very young children. If the child rushes home immediately after the offence and tells an adult what took place, the adult can give evidence, which is not corroborative, but which may show the consistency of the story. As soon as the adult hears the story from the child he should be encouraged immediately to report the facts to the police, and should at the same time have the child medically examined, if possible by a woman doctor who would be prepared to give evidence in court, or by a police surgeon, preferably a woman.

Before there is any further procedure, a woman police officer should, as soon as possible, take a statement from the child in the presence of her mother. In large cities there should always be a woman police officer especially trained to know how to take statements from children. It is a highly skilled undertaking. Such an officer could be called to do this in the more rural districts where no such officer exists. An experienced officer is generally capable of knowing whether a child is telling the truth or making up a story. If she is satisfied that an assault of some description or indecent exposure has occurred, the parents should then be persuaded to ask the police to proceed if the man can be traced and identified.

When the alleged offender is tried in the Magistrates' Court and if he does not plead guilty, I feel that it is essential for the child to give evidence in person, as the magistrate is greatly helped in deciding whether he believes her evidence from hearing the story from the child herself. The Israeli practice of having "a youth examiner" read out the statement made by the child would not be in accordance with the traditions of British justice. The police should be represented by a solicitor or counsel, and the Bench should include a magistrate experienced in dealing with child witnesses, if possible a woman Justice from the Juvenile Court Panel. It would be a very great advantage if the defendant were represented by counsel or a solicitor. It is extremely frightening for the child to be cross-examined by the defendant, and this is especially true in cases of rape or gross indecency. I am, however, aware that Parliament

*Sir Basil Henriques died on December 2.

might be reluctant to take away the citizen's right to defend himself if he so pleases.

It is most desirable that there should be a summary trial, which should be held in the magistrates' retiring room with the press but not the public present. The names of child witnesses should be suppressed.

If indecent assault were made an offence triable either summarily or on indictment, with a maximum penalty of three months on summary conviction, the prosecution could ask for summary trial or trial by jury, and the court would decide. In appropriate cases the proceedings could begin as committal proceedings, but magistrates, if they thought fit, could decide during the hearing to try the case summarily. The defendant would always be safeguarded to the extent that he could appeal to a higher court if he was dissatisfied with the finding of guilt or the sentence.

Evidence on Oath and Cross-examination

No one under the age of 14 should be asked to take the ordinary oath, but the modified oath now used by the London Juvenile Courts or the one recommended by the Ingleby Committee—" I promise before Almighty God to tell the truth the whole truth and nothing but the truth "—should be used.

The Ingleby Committee recommends that a child should still be entitled to make an unsworn statement instead of giving evidence on oath. The Bench has to be satisfied that the child knows the difference between lying and telling the truth. This is important where an offence is said to have been committed in the presence of another very young child, who would not be able to give evidence on oath, but who could give evidence in this way, though it must be remembered that evidence so given requires corroboration by sworn evidence. Sometimes sexual assaults have a more traumatic effect on the child witnesses than on the victims of the offence.

It is in cross-examination of a child witness that it is so desirable for the offender to be represented rather than for him to do the cross-examination himself. Even if the defendant is not represented, the questioning should be done through the Bench and not direct to the child. It is possible for the cross-examination by the defendant to be even more terrifying to the child than was the actual assault. An experienced member of the Juvenile Court Panel should always be a member of the Bench in these cases so that he or she can interpret to the child the questions she is being asked. Very few people realize how extraordinarily small is the vocabulary of a normal child, and often the wrong answers are given because the child has not fully understood the questions asked.

Higher Courts

At one time I had advocated that when a case has to be heard in a higher court the sworn depositions of the child might be read in that court so that the child might be saved the agony and the shame of having to repeat her story aloud in front of many strange people. But I have now been convinced that it is necessary for her to give evidence so that the jury may judge the truth of her statements. The Israeli practice will not do.

It is in the present procedure in the higher courts where the gravest injustice to the child may be done. If she had rushed home to tell her mother the story, the mother would not be present in court unless she had given her evidence before the child. The child, therefore, would have to undergo the terrifying ordeal of standing in the witness box in front of an enthroned and bewigged judge and wigged counsel and before a jury of twelve people. It is permissible to clear the court of the general public except the press, and for the judge at Assizes or chairman of Quarter Sessions to direct that the name of the child witness be suppressed. But this is not always done and the child feels that she is, so to speak, standing naked in the presence of a large crowd of strangers. The examination or cross-examination by counsel wearing wigs also has the effect of muddling the memory of a child.

The suggestion is that instead of using the ordinary court room of the Assizes or Sessions the proceedings should take place in a committee room large enough to hold a jury. The judge or chairman should sit at a narrow table on floor level, and should have the assistance of an experienced justice of the Juvenile Court Panel. Wigs should not be worn, and the modified oath should be used or if necessary an affirmation made. These suggestions surely do not put the defendant at a disadvantage, and justice would be done to the child.

Delay, Uncertainty, and Repetition

At present it is never known on which day of the Sessions or Assizes the case will be heard ; the child is warned to be ready to give evidence on the first day, and then may have to keep tense, waiting for the ordeal, for perhaps four or even more days. It is most unlikely that a child will be capable of giving good evidence after such a period of expectation and disappointment. It surely ought to be possible for the clerk of the court to arrange for a specific day on which the case of a sexual assault on a child will be heard.

There are two goals to be sought : First, that the child should have to repeat her story as few times as possible —constant repetition will only result in parrot-like recitation or else in an increasingly exaggerated and embroidered account of what took place. Secondly, that the final trial shall take place as soon as possible after the event so that it may be more quickly eradicated from her memory.

The case should be referred to the next Quarter Sessions or Assizes (which will be sitting within reasonable distance) after it has been heard in the Magistrates' Court.

So far as possible the re-living and re-experiencing of what is often a most unpleasant and traumatic experience must be avoided. In the procedure suggested, apart from telling an adult immediately after the offence, at the most she would only be required to repeat the story privately to the police officer, and (in a not guilty plea) to the magistrate and, if there is a jury trial, to the chairman of Sessions or judge of Assizes. But the speed of getting the case completed is of no less importance, for the benefit of the child and also perhaps of that of the defendant, who is all the time on tenterhooks as to his fate.

Justice to the Child

Children in these cases react in different ways. Some seem not to have been disturbed at all, others pretend not to have been disturbed. There are often very strong guilt feelings. There are children who are ashamed of what happened to them and there are those who have a

tendency to show off and who are perpetually telling their friends about their experiences. If after a lapse of time a child's general behaviour seems to have changed, parents should be encouraged to seek the advice of a psychiatrist, but if the child remains apparently quite unperturbed, the subject should not be mentioned again unless the child brings it up.

Finally, I must emphasize that it is as important that justice is done to the child as it is to the defendant. Our present procedure does not do justice to the child.

III.—MEDICAL ASPECTS

BY

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Earlier this year correspondence in *The Times*, under the heading "Ordeal Prolonged," drew attention to the harm done to children who have been sexually assaulted. The number of these cases of sexual assault in children has increased since the war, as it has also in adults. The Cambridge Department of Criminal Science's survey[1] of sexual offences known to the police in England in 1947 found that 82% of the victims in their sample were children under 16 years—the age of consent. Similarly, in my own series[2] of nearly 2,000 cases examined as woman police surgeon in Manchester up to 1954, there were 83% aged under 16 years. Of the total cases seen 57% were under 13 years old, 34% were under 8 years, and 20% were under 6 years. (I was asked to see only a few boys, all under 7 years and probably not more than a dozen altogether, but what I say later about little girls would generally apply equally to little boys.)

The number of little girls who are the victims of sexual assault is therefore considerable, especially if one adds that much larger number which must exist but which remain unknown to the police, largely because their parents fear publicity and the risk of increasing psychological trauma in an already disturbed child. This omission to report is a pity, as reporting might lead to the tracking down of a man who has been assaulting other little girls. The co-operation of the public is therefore important. Improvements in procedure could be made at all stages to reduce the emotional harm to the child victim.

Types of Case

The cases can be divided roughly into three types: indecent assault, carnal knowledge, and a small group of miscellaneous cases. The largest group that I examined was for indecent assault, the incidence ranging annually from between 45% and 80% of all cases (usually between 55% and 65%). The age distribution was very striking as over half the children involved were 7 years old or less, most being 5 or 6 years old. The majority were due to handling of "the privates," with increasing degrees of reddening and signs of irritation up to tearing of the hymen by insertion of the finger with resulting haemorrhage. But quite a fair proportion were the result of pressure with the penis against the vulva and between the legs. The amount of physical damage was thus not great unless infection supervened.

The carnal knowledge cases were in girls of 11 years and over, mainly of 14 and 15 years with a few of 16 years who were pregnant or gave a history of intercourse prior to the age of consent. Comparatively few were in the 11–13 year group and many of these had been assaulted by boys under 17 years. Pre-war the cases were fewer and mostly genuine assault cases, girls who were young for their age or possibly a bit slow in the uptake, but since the war there have been a much larger proportion where the girl has been a willing partner, or at any rate made less resistance. As a result partial or full penetration with the penis has resulted in a large number of them contracting gonorrhoea or other venereal infection. Whether or not this will be found on examination will depend on the interval since intercourse occurred, but it must be tested for. The third group included, among other offences, sodomy (only seen since the war), and incest usually by father or brother, the extent of damage ranging from that in indecent assault to pregnancy.

Young Children

In the majority of cases the younger child will tell her story as soon as she gets home to her mother, but sometimes she is afraid to tell, fearing a chastisement, and will wait to tell a relative or neighbour to whom she can speak more freely. This delay may be serious, as the court may decide that the complaint was not made at the earliest possible moment, and therefore the statement of this person concerning the complaint cannot be used as corroborative evidence in court.

A child's reaction to assault varies a great deal, being partly influenced by age, intelligence, general temperament, and home conditions. The under-7-year-olds are usually frightened and still show this fear when examined, but to some extent may have been reassured by their parents and be beginning to get over their fear of strange people. They are mainly cases with only slight damage and signs that quickly disappear. The emotional disturbance is usually tackled fairly sensibly by the parents, and reassurance, love, and carrying on a normal existence gradually restore the feeling of security, and the child remembers little. But of course the older and more intelligent will tend to merge into the next age-group of the 8-to-12-year-olds (prior to the onset of menstruation). With this group there may have been much physical pain, with tearing of the hymen and haemorrhage, and also fright, as probably the man threatened the girl not to tell anyone. Consequently she had to pluck up courage to report it and has some feeling of shame and guilt as well. With all these young girls it is especially necessary to gain their confidence, otherwise their fears may prevent them telling the whole truth. An unsympathetic approach will only lead to a poor statement and the likelihood of deepening the trauma in the child's mind. With care a good, reliable account can be obtained even from the 3-to-5-year-olds.

Much therefore depends on the way the statement is taken, so a policewoman of experience who understands children should be sent to the home, or wherever the child can be most relaxed, immediately the complaint is received. This is better than taking the child to the police station. The policewoman should go in plain clothes with as little fuss as possible, because neighbours will talk and the whole family may become the centre of unhealthy interest. The mother (or confidante of the child) should be present in order to give her more feeling of security as she goes over the unpleasant details of the assault. Done in the right way this can release some of the pent-up feelings of fear and resentment, and to some extent may be helpful to the child. Care,

however, is necessary to steer straight between making her stop talking because she feels she is not believed, and making her elaborate with frills what actually occurred.

Medical Examination

There are probably no witnesses of the actual assault, so that any medical evidence is important to corrobate that something has happened, even though it does not say who did it. An examination should therefore be made at the earliest possible moment, even if the police are uncertain whether or not the case will go forward. The exact nature of the offence may then be determined as well as possibly getting corroboration of the child's statement, for it often happens that what was thought to be indecent assault turns out to be carnal knowledge and vice versa. Also accumulation of evidence against him may persuade a man to plead guilty, and so save the child giving evidence and allow the case to be heard in the Magistrates' Court.

Because the signs vanish quickly the police must know at once on whom they can depend to make the examination. Most police surgeons are men. But when a little girl has been frightened and upset by the way in which a man has treated her, it seems natural that she will not mind a medical examination so much, with the taking of smears, etc., if it is done by a woman doctor; otherwise it may seem like another assault and increase her fears when she is touched again by a man. This means that there should be a designated woman police surgeon for the area, known to be willing to go to court if necessary and to have the required tests handy. The examination should take place at the doctor's surgery and not at the police station. (This I found was easily arranged by the chief constable.) In very recent cases it often worked better, and saved time and repetition, if the policewoman brought the girl to see me before taking the full statement. We heard her story together, which gave me an idea of special clues to look for, and the policewoman could get down a clearer statement afterwards. Experience in dealing with these cases is very helpful to both doctor and policewoman in getting a good history and making a good judgment of whether and how far the child is telling the truth. A rough assessment of the child's I.Q. is also helpful, as it may explain why the child was slow to realize what the man was up to. Too often it happens that mention of "slowness" in court is wrongly interpreted, and the child's story is disbelieved. This is unfair to the subnormal child, as soon after the event she can give a good, obviously true account, simply because she has not got the intelligence to make it up; but her memory is poor, the details soon become blurred and patchy, with the result that after a time the story may vary and she gives the impression of an unreliable witness. The quicker all these investigations can be made, the easier will it be for the child to let the whole occurrence slip from memory into the past without it leaving serious after-effects.

Advantages of an Early Hearing

Thus far, procedure can be roughly the same in all cases reported to the police, whether the man has got away or is in custody. If it is decided to take the case to court then it should be done with the minimum of delay. Many of these children are old enough to feel anxiety about going to court, often made worse by the parents' attitude, so the sooner the case can be finished the better. Moreover, the less time that elapses between the occurrence and the hearing, the more likely will the magistrates be to discover the truth of what happened. The general impression may be felt deeply, but the times and sequence of details may fade more quickly from the memory. For this reason I think that some method should be evolved for utilizing more fully the statement made to the police.

If the man pleads guilty, the child's statement could be read to the magistrates, who could try the case and refer it to a higher court for sentence in the severer cases. If he pleads not guilty, it is right that the child should be seen in court by whoever is to try the case, but some new legal arrangements need to be made so that the child has to give evidence only once—not twice as at present, first before the magistrates and then in the higher court. This hearing should be held without delay to save the child having to repeat, after an interval of weeks, all the sordid details, thus reviving all the unhappy emotions and making the assault more difficult to forget. It would help if counsel or the clerk of court could get the child's agreement to the police statement rather than making her tell afresh the details of the story, as usually happens now. This would be less strain on the memory, and the statement would be nearer the truth; also the time spent in the witness-box would be reduced, and the whole proceeding more easily forgotten without leaving deep scars.

Arrangements for Children

Other ways of reducing the ordeal of the court include the use of a small room with as little formality as possible and the exclusion of the public. Children are frightened and overwhelmed by large courts, high benches, the railed-in prisoner's box, and all the people scattered round about and the legal clothing in the higher courts. Identification of the accused should not be obligatory where the police can report previous identification. Cross-examination if required is better done through counsel or the clerk, as it can be very disturbing to the child to answer the man to his face, especially if he has threatened her not to tell anyone.

People need to realize that, if justice is to be done, special arrangements should be made for these child witnesses at least equal to those already made for juvenile offenders. These include the presence on the Bench of magistrates, preferably including a woman, who are used to dealing with children, the hearing of the case in a small room with a place where children can wait away from the adult courts, and the fixing of a time and day to avoid delay. These may seem small points, but in the aggregate the effect on the child of present procedure may be considerable, adding to the emotional disturbance of the assault and making it more difficult for her to let it slide quietly into the background of her mind, so that there is an enhanced risk of conflicts developing which may give rise to neuroses in later life.

Older Girls

Much of what has been written applies equally to the older girls of 12 up to 16 years old, but there are differences. Since the war there have been more cases involving sexually well-developed girls who could and did respond to the man's advances. Though legally, if the girl is under 16, it does not matter whether or not consent was given, it is very necessary to get at the truth if one is to deal properly with both the man and the girl. The home background is important—broken

homes predominate—and aftercare by local authority, remand home, etc., is often required. There are other girls, with a better upbringing and higher moral standard, who get a big shock, and though they never forget they do manage to let the incident quietly recede. But there are many rather sensitive, often intelligent girls who never seem able to see things again in quite the same way. Their attitude to boys and men will never be quite natural, unreasonable fears of many kinds may develop, and their whole emotional life may be thrown out of balance. The sooner these girls get psychiatric help the better.

These carnal knowledge cases are those most likely to be sent on to the higher courts for trial, which nearly always means waiting weeks or even months. This is a long and anxious period and can be a big strain to even the calmest of girl victims. They are not allowed to forget, but almost certainly times, sequences, and other details may get a bit confused, and instead of being helped to get over the shock and feeling of shame and loss of self-respect the wound is deepened when the evidence has to be repeated in a more overwhelming court atmosphere. This repetition especially needs to be avoided somehow in these higher court cases.

Even when a modified form of affirmation is used for children, there are many who are too young to be sworn (one-third of my cases were under 7 years) and therefore their statement can only be admitted if the Bench is satisfied that the child is telling the truth. Help in making this decision could be obtained by using the opinion of the policewoman and the doctor who saw the child in the first instance, as both are likely to be experienced in dealing with children. Some corroboration may be obtained from the person to whom the complaint was first made, but often the case falls through because of the lack of sworn evidence. These are innocent children and at present they do not receive justice. They are left without protection against the actions of men who are usually perverts or mentally subnormal and who are therefore apt to assault others if left unrestrained.

Aftercare

Provision needs to be made for some form of aftercare. At present it is nobody's job to see that the parents get advice about how the child should be treated or whether they themselves also need help. The family are often loath to go to their own doctor unless there is actual illness, so there may be no one to take an overall view of the family, even though some unsatisfactory features may have been brought to light. The police surgeon or officer in charge of the case might do something, but it would be better if automatically the parents could be put in touch with some welfare organization, health visitor, child-guidance or family welfare clinic, who could watch developments and give advice as and when required. In any case the parents should be told the nature of the damage and warned to look out for the onset of V.D. or any change in the child's behaviour or appearance. Onset of restlessness, irritability, or sleeplessness may follow emotional conflicts, or the extrovert may take pleasure in bragging about the affair and generally showing off. Much depends on the child's temperament and the unselfish and understanding treatment by the parents helping her to regain confidence in herself and other people, so gradually allowing the disturbance to fade back into memory and subconsciousness with as little scarring as possible. But a psychiatrist may be needed, and this help should be given early rather than late.

Legal Emergencies

There seems adequate reason for a new approach to be made, so that all sexual assault cases can be treated as special legal emergencies, and arrangements made as suggested above for quick, understanding treatment by the police, lawyers, and the courts, with four main ideas in mind: (1) To get as near the truth as possible. (2) To give the accused a fair trial, but not let him off if guilty. (3) To prevent the child receiving further damage after the assault through bad procedure and repetition. (4) To provide advice where "aftercare" can be obtained for the child and her family.

Many of the accused men suffer from perversions and lowered mentality, so it should be compulsory for the Bench, after convicting but before passing sentence, to ask for and obtain a medico-psychological and social report on the man, in order to find the best way of dealing with him and if at all possible preventing recurrence. In most cases prison alone is no use. Finally, the public should be asked to co-operate and report cases even when the man has disappeared. Easing of procedure for the victim may encourage parents and others to help, and certainly in Manchester parents agreed more readily to the medical examination when they heard that it would be done by a woman.

Little Yet Done

As long ago as 1949 a Joint Committee on Psychiatry and the Law, appointed by the British Medical Association and the Magistrates' Association, drew up a report on the "Criminal Law and Sexual Offenders"[3] which strongly recommended changes somewhat similar to those made above. A report on my own cases in 1958[2] again mentioned many of them. Many women's organizations have for years been pressing for the appointment of more policewomen and women police-surgeons for dealing with these sexual assault cases. But little seems to have been done about it. It is high time somebody took the initiative in bringing together the magistrates, the lawyers, the B.M.A., and the police and Watch Committees so that a plan of campaign can be agreed. After 12 years of waiting more justice for both the accused and the child victims of sexual assault is long overdue.

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The Annual Report of the Commonwealth Fund for 1961 mentions that Boston University has extensively revised the premedical and medical curricula. The new course will last six years instead of the usual seven or eight. Students are to be selected towards the end of their senior year in secondary school, and the six-year programme will combine liberal arts and a medical course throughout most of its span. "It is expected that the new program will provide the student with greater security, more guidance, stronger grounding in the sciences, and a better integration of liberal arts, scientific, and clinical subjects than he now obtains." The Commonwealth Fund has made a grant of $550,000 to support this programme.

ANGLO-YUGOSLAV MEDICAL RELATIONS IN PEACE AND WAR*

BY

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Although the medical centres of Great Britain, owing to their distance from Yugoslavia,† have influenced Yugoslavian medicine less than those of neighbouring countries such as Italy, Austria, and Hungary, some traces of contact can be found as far back as the seventeenth and eighteenth centuries. But the first real co-operation dates from the end of the nineteenth century, when assistance began to be given to Yugoslavia by various British charitable and other organizations, by groups of doctors, and by individuals—assistance which has continued during the first half of this century.

The first observations on health conditions prevailing in Yugoslavia can be found in the writings of several British doctors, diplomats, travellers, and visitors, like John Burbury, George Sandys, and others who travelled through Austria, Hungary, Serbia, and Turkey. One of the oldest of these descriptions is that by Edward Browne, F.R.S., published in London in 1673. John Howard's famous book on hospitals and the plague in Europe contains a description, on the basis of local reports, of the epidemic of plague in Split in 1784 and the measures taken to combat it. Early in 1717 Lady Mary Wortley Montagu described in two letters her journey from Belgrade to Adrianopolis, and mentions the characteristics of the country and its people. The famous Richard Bright published in Edinburgh in 1818 his excellent description of a journey through Austria and Southern Hungary, in which he gave his impressions of social and health conditions in some Croatian provinces. Garrison said Bright's book was the best on travel ever written by a physician.

Spread of Knowledge

Through printed works and by personal contacts, but particularly through the help and influence of the medical schools of Bologna and Padua, Yugoslav doctors, primarily those of Slovenia and Dalmatia, quickly became acquainted with the new achievements of British science and medicine. Marcus Gerbezius (1658–1718), famous for the first description of complete heart-block, was the main disseminator of Sydenham's medical theories both in Northern Italy and in Southern Germany. In Sydenham's book on fevers whole chapters on the "epidemic constitution" in Slovenia's capital, Ljubljana, were written by Gerbezius. Jenner's discovery of smallpox vaccination quickly reached Yugoslavia by way of Vienna, Italy, and Budapest. Only two years after the publication of Jenner's method Stulli performed vaccination in Dubrovnik, and a year later Lueff did the same in Varaždin. By 1805 a number of booklets on vaccination were published in Yugoslav provinces. The method was quickly accepted and soon became compulsory.

Towards the middle of the last century three English women—Mary Adelaide Walker, Alexandra Kerr, and Lady Stratford—travelled through Serbia, Bosnia, and Montenegro, and wrote on the life and social and health conditions there. Adeline Paulina Irby (1833–1911), a great benefactress and social and educational worker, became a legendary personality among the Serbians, particularly in Bosnia and Herzegovina. Together with her colleague, Mure Mackenzie, she spent most of her life in Bosnia establishing schools. She also helped the refugees of Herzegovina after the rising against the Turks in 1876, giving first-aid to the sick and wounded. Miss Irby's and Miss Mackenzie's books and numerous articles about the Christians in the Turkish empire contributed greatly to a better understanding of the position of these peoples and their struggles under the Ottoman rule.

A remarkable but not well-known fact is that during the Crimean War British Army medical officers visited the north of Serbia and wrote detailed reports on the climate and on infectious diseases as well as on the general conditions of hygiene. It is worth mentioning also that a Yugoslav from Osijek (Croatia), Edward Emanuel Klein, F.R.S. (1844–1925), became lecturer on histology at St. Bartholomew's Hospital, London, and a well-known pioneer in bacteriology. Ronald Ross was one of his pupils.

The Wars of Liberation

Among the foreign medical missions which rendered assistance to Serbia and Montenegro in their wars of liberation over a period of more than 70 years, British medical teams were in the majority during the first world war. In the archives of the British Red Cross Society the earliest particulars of the activities of medical units in Serbia and Montenegro date from the first Serbo-Turkish War in 1876–7. At that time the British established in Belgrade an army hospital with 150 beds. A surgical unit under Sir William MacCormac served in the front line. Dr. Vladan Djordjević, who was then head of the Serbian Army Medical Corps, vividly described in his memoirs his numerous meetings with the British. In one of his books he wrote:

"I hastened on, as fast as I could, towards the Trnjane inn, to find the British operating in the corridor of the inn, leisurely as if they were in the operating theatre of St. Thomas's in London. I warned Dr. MacKeller to hurry up because the Turks were already near.

"'Oh, yes,' said MacKeller, calmly completing the operation.

"The Turks had cut off our road, and the only alternative was either to go through Djunis or cross the Morava river, perhaps even to swim across it. I tried to explain to my colleagues, as best as I could in English, this alternative that was left to us, letting them to make the choice.

"'Oh, yes,' said MacKeller, 'I think through the Morava river—that will be a very interesting passage.'

"'All right,' said the other surgeons, and we entered the river. But when the strong middle current started dragging us downwards together with our horses my comrades realized that all wasn't quite all right."

During the fighting against the Turks in 1877 the British National Aid Society sent John Furley as its commissioner to Montenegro. There he became

*Abridged from a lecture given at the Postgraduate Medical School, Cambridge, and at the Royal College of Surgeons of England, July, 1960

†In order to simplify the matter I shall refer all the time to "Yugoslavia," although it came into being under this name only in 1918. Prior to that some parts of the country belonged to Austria-Hungary and some—the kingdoms of Serbia and of Montenegro, for instance—were independent.

acquainted with the difficulties facing this little State, and in his lengthy report he paid tribute to the heroism and endurance of her sons. Here is an excerpt:

"The Prince of Montenegro told me that he had met a man with a fractured thigh who insisted on being lifted on a horse, and he rode away regardless of the agony he was suffering. . . . These men preferred to die rather to lose an arm or leg. . . . Here the men are all soldiers and receive no pay. . . . The blessing invoked on a boy when he comes into the world is that he may not die in his bed, and a pistol is the first plaything put in his hand."

During the Serbo-Bulgarian War in 1885–6 the British Red Cross Society sent one mission to Belgrade and one to Sofia. In Belgrade they organized a reserve hospital, staffed by four British surgeons and helped by Serbian voluntary nurses and schoolboys. The chief of the mission in Sofia, Kennett-Barrington, reported that the kindness and helpfulness of the Serbian General Command in making it possible to send international supplies of medicines and clothing to wounded Bulgarian soldiers were without precedent in the history of war.

After the so-called "Ilinden" rising of the Macedonian people against the Turks in 1903, a rising which was not successful, many thousands of families lost their homes and lived in terrible conditions. The London Balkan Committee sent a mission to Macedonia under Lady Eleanor Thompson. This mission gave social and financial help to the refugees, and founded hospitals in Bitola, Ohrid, and other places.

In the First Balkan War (1912) various foreign missions were sent to Serbia, among them two of the British Red Cross Society (one of the Scottish and one of the Welsh branch) under Mr. (now Sir) Max Page and Major Douglas, R.A.M.C. In November, 1912, they formed a large hospital in Skoplje, where a great number of Serbian soldiers were treated. The members of this mission were decorated with Serbian Army and Red Cross medals.

First World War

During and after the first world war there were many missions sent to Serbia from various countries, including Russia, France, and the U.S.A., but it appears that the British can claim foremost place in these efforts, both on the battle fronts and behind the lines, where the wounded, the sick, and the children were cared for. By the end of 1915 they had in Serbia over 20 medical missions, hospitals, and teams. Pride of place must be given to the Scottish Women's Hospitals in different towns. The leader of this organization, Dr. Elsie Inglis, remained during the Serbian retreat with her unit to await the arrival of the enemy, because she did not want to abandon her wounded. The soldiers called her "srpska majka," which means "Serbian mother." Later Dr. Inglis went with two hospital units to join the Yugoslav voluntary divisions in Dobrudja and Southern Russia. There she fell ill, and she died immediately after her return to Britain. She really was "amica Serborum certissima," as described on the memorial plaque of the Medical Faculty in Belgrade.

After 1915 the Scottish Women's Hospitals continued to work with the Serbian Army in Salonika, on the Ostrovo Lake, and in Vranje. The head of the hospital in Vranje was Lady Emslie Hutton, who until her death in January, 1960, remained a great friend of our people. Among other missions led by women there were the hospitals of Lady Leila Paget and Lady Wimborne in Skoplje. St. Clair Stobart's hospital in Kragujevac also had out-patient departments for civilians in neighbouring places.

Many of these hospitals were sent and equipped by the Serbian Relief Fund. The Joint War Committee of the British Red Cross Society and the Order of St. John had the following hospitals: one in Skoplje, in charge of Dr. J. Johnston Abraham, the famous author of *My Balkan Log*, two in Vrnjačka Banja with Sir James Berry and Dr. E. Bennet in charge, and one in Montenegro with Dr. F. G. Clemow in charge. After the retreat of the Serbian Army Sir James and Dr. Clemow headed two hospitals sent to the Dobrudja front in 1916–17. Other British medical units belonged to the organizations called "Aid to the War Allies" and "The Eastern Aid" (under Admiral Trowbridge), and to the English Methodist Church.

There was also a strong British military medical team sent to the country, consisting of a complete hospital with 30 doctors. This group contributed a great deal to the fight against typhus, the disease which claimed tens of thousands of victims among Serbian soldiers, civilians, and prisoners of war, including a large number of doctors and nurses. Among these last were about 40 belonging to various British missions—for example, Dr Louise Ross and the writer Mabel Dearmer. In 1917 Catherine Harley, who with her two daughters accomplished a great deal by leading the Scottish Women's Automobile Transport Columns, was killed by a bomb in the recently liberated Bitola. Scottish women did outstanding service in the work of evacuating the wounded, especially on the Salonika front during

Memorial plaque to Dr. Elsie Inglis in the Medical Faculty of Belgrade.

A Scottish Women's ambulance car on the Salonika front.

the fighting for Bitola and the great battle of Kajmaktchalan. Many British doctors shared with our troops the most trying times of the withdrawal through Albania and of the recapture of Serbia.

After the catastrophe in the autumn of 1915 British organizations, especially the Serbian Relief Fund, transferred their efforts to helping disabled and convalescent soldiers and assisting refugees in various parts of the world—from Corfu and Corsica to Bizerta and other North African towns—where various hospitals for invalids and cases of tuberculosis were established. Particulars of these activities were published, some during the war itself, in more than 30 books of memoirs and reports. All these publications helped considerably to acquaint the world with the struggle and the just cause of the Yugoslav peoples. Two written by Flora Sandes are particularly interesting. This Irish girl came to the Serbian army as a medical sister, but very soon left her hospital work and joined the fighting units, eventually reaching the rank of captain.

As a result of all these activities many British surgeons and physicians returned home with rich experiences and new approaches to some medical problems in war surgery and other fields.

After the war many British women doctors did good work in Yugoslavia—in medicine, in social care, and in rehabilitation. For instance, the Dr. Elsie Inglis Memorial Hospital was founded in Belgrade. Dr. Catherine MacPhail organized the first children's hospital in Belgrade, and some years later the first hospital for tuberculous children in Kamenica. In the second world war Dr. MacPhail came again to Yugoslavia and remained there working for a number of years. An orphanage under Florence Maw and Jean Rankin was opened in Nish, and various other similar institutions were established in different places. The late Sir James Berry and Lady Berry established an endowment fund to provide scholarships for Yugoslav women medical students and doctors studying in Great Britain.

Second World War

The old wartime comradeship of British and Yugoslav doctors was renewed during the second world war. The assistance rendered to the medical corps of the partisan forces was threefold—the sending of doctors, particularly surgeons; the provision of medical supplies; and the evacuation of sick and wounded to Italy and Allied bases. The first British doctor to reach our country, Major MacKenzie, was parachuted in August, 1943. Among his colleagues who later worked in various places as members of independent surgical teams—for example, on the Isle of Vis—or in the partisan hospitals, particularly popular was the New Zealand surgeon Lindsey Rogers, who worked in Dalmatia and Bosnia and later in the underground hospitals in Slovenia. After a meeting with Marshal Tito, Rogers organized a special teaching hospital in the forests near Drvar. His book *Guerrilla Surgeon* is widely read in Yugoslavia.

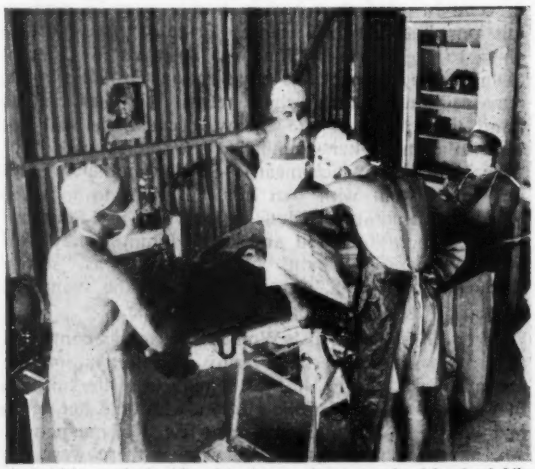
After 1943 the partisan troops were receiving more and more medical supplies from the Allies, especially from the British Army. Of particular importance was the evacuation on a large scale (by air and to a lesser degree by sea) of more than 12,000 sick and wounded. This was important not only for their successful treatment and recovery but also for the greater mobility of the Yugoslav fighting troops. The first evacuation took place at the end of 1943, but operations on a larger scale did not start till the spring of 1944, mainly from the improvised airports in Bosnia, Slovenia, and Croatia. From 1943 a Yugoslav medical mission was stationed in the liberated part of Italy, because the Allies, primarily the British, had established in the vicinity of Bari a series of hospitals and special units where several thousand partisan soldiers were treated. These medical bases also served as centres for the training of our doctors and other medical workers.

Among the large number of British doctors who helped in the creation and the work of these hospital units I should like to mention especially Brigadier (now General) R. D. Cameron, Colonel (now General) Sir Alexander Drummond, and the late Sir Harold Gillies. Many of these friends of our country are still helping our doctors to come to Britain for special studies and training.

Continuing Co-operation

Towards the end of the war and immediately afterwards British doctors and scientists played an important part in introducing some of the latest medical discoveries into our military and civilian medicine. And every year

Flora Sandes as a Serbian sergeant at Salonika.



A British surgical unit with the partisans on the island of Vis, 1944.

since the end of the war British specialists have been visiting our centres to lecture, to teach, and to operate. More and more Yugoslav doctors as well as nurses visit Britain for the purpose of special training. Also the number of visiting lecturers from Yugoslavia is increasing steadily. Many standard works by British authors have been translated into our language in the course of the past few years, and there is an active exchange of medical journals between our countries. Cordial relations exist between our medical organizations and the British Medical Association, the Royal Society of Medicine, and many other medical institutions.

I hope that this short survey has shown that a friendly medical co-operation has existed between our peoples for several centuries, in spite of the geographical remoteness and the differences in languages, in social evolution, and in political opinions. This co-operation and mutual exchange of knowledge—in the past, at present, and, I am sure, in the future—is a brilliant example of international understanding and friendship.

I would like to thank the many institutions, colleagues, and friends, both in Britain and in Yugoslavia, without whose help my research and this article would not have been possible. I am especially grateful to the Imperial War Museum, to Dame Beryl Oliver, Dr. G. E. W. Wolstenholme, Dr. E. A. Underwood, Dr. F. N. L. Poynter, and Miss Ethel Wigmore, all of London, and to Professor Dr. L. Glesinger, of Zagreb.

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The Annual Report of the Commonwealth Fund records that a grant of $600,000 has been made to the Harvard Medical School for the purpose of helping to finance the Francis A. Countway Library of Medicine, which will serve the entire metropolitan Boston community. The new library, which will be second in size only to the National Medical Library in Bethesda, will combine the existing medical library of Harvard University and the Boston Medical Library, and it will be housed in a new building on the campus of the Harvard Medical School.

FIRST PAN-AFRICAN PSYCHIATRIC CONFERENCE

[FROM A SPECIAL CORRESPONDENT]

This conference, which was held at Aro Hospital, Western Nigeria, from November 12 to 18, was successful from several points of view. It was a landmark in the self-realization and development of African psychiatry; the standard of the papers was very high; and finally, and not least, it has demonstrated to all developing countries what can be done with limited psychiatric resources. The principles indicated by Sir AUBREY LEWIS in his inaugural address—to start with well-trained psychiatrists, to maintain high standards rather than to spread indifferent work more widely, and, having chosen priorities, to pursue them in a judicious but "not too restrained" a manner—have clearly been followed in Nigeria, and indeed in other countries of Africa, with impressive results.

The conference, though encouraged by the Federal and Western Region Governments and supported by Trusts, Foundations, and commercial firms, was entirely due to the initiative of Dr. T. ADEOYE LAMBO, senior psychiatrist in Nigeria and superintendent of Aro Hospital. He, together with Dr. TOLANI ASUNI and an efficient secretariat, deserves credit for the enterprise and its smooth running. Eighty-five official delegates from 21 countries, ranging from Norway to South Africa, and from the U.S.A. to Mauritius, attended the conference. The chairman, Professor A. H. LEIGHTON, was familiar with local problems, having recently completed a pilot epidemiological study in the surrounding villages with the help of the staff of the Aro Hospital and his team from Cornell University.

Besides clinical demonstrations by Sir AUBREY LEWIS and Sir RUSSELL BRAIN, ward rounds, and visits to places of interest, 44 formal papers were presented. The proceedings are to be published in full (applications for copies should be addressed to Dr. Lambo at Aro Hospital, Abeokuta), and a special number of the *West African Medical Journal* will be devoted to the conference.

Psychiatry in Africa

The basic theme was concerned with problems peculiar to African psychiatry, and with prevention, research, and training of staff in the midst of changes which are occurring more quickly and urgently than ever before. The peculiarities of African clinical psychiatric material proved especially fascinating, and it was always difficult to know whether they were real or masked by intercurrent physical disease (especially malnutrition, anaemia, or vitamin deficiencies) or by social and anthropological factors. Why, for instance, is the sex incidence of psychiatric disorders the reverse of what we know in Europe and America? Is it a real but temporary phenomenon, or is it due to the reluctance of women to present themselves? Is depression relatively rare in Africa or are recent suggestions correct in stating that it merely presents itself in a form masked by agitation and hypochondriasis, or that depressed persons disappear into "the bush," or are dealt with by native healers (who show signs of multiplying and adapting to the times)? A study by Dr. ASUNI of the incidence of suicide in Western Nigeria implies that depression may be much more common than had been supposed. Similarly in physical medicine, the objective studies of Professor A. BROWN (University College Hospital, Ibadan) show that peptic ulceration in West Africans, formerly reported as rare, is in fact

common. The rarity of atherosclerosis, however, despite the frequency of hypertension, would appear to be an absolute fact and perhaps related to the diet in early life. Endemic neurological disorders—for example, the tropical neuropathies (Dr. G. L. MONEKOSSO, University College Hospital, Ibadan) and the meningitides (Dr. A. O. LUCAS, University College Hospital, Ibadan), especially the virulent pneumococcal variety—were the centre of much interest.

Cultural Differences

Amongst children the extreme permissiveness of their upbringing, the relatively small influence of fathers before puberty, the ease of transfer of children within the extended (often polygamous) family, are factors which await investigation and which stress the danger of applying Western ideas without very careful consideration. What, for example, might be the relation between these cultural factors and the apparent absence of seriously aggressive crime in and before adolescence, for the one reformatory institution does not receive any such boys, nor does the psychiatric hospital, and youths under 18 years cannot be committed to prison?

The sexual perversions as we know them here are virtually absent, so that a single case of "compulsive" sexual misbehaviour becomes a matter of particular psychiatric interest. Mental deficiency is not a great problem, whether because of the low demands made upon individuals in an agricultural community of villagers, or because of a high early death rate; yet it is surprising that mongolism has very rarely been found as yet. Dr. LAMBO pointed out the urgent need for developmental standards, including intelligence tests, against which to assess African children.

Hospital and Community Care

The setting of the conference at Aro Hospital was of at least as great interest as the proceedings, by reason of the outstanding skill and adaptability that has been used in deploying as yet very limited psychiatric facilities. There are two psychiatrists, Drs. Lambo and Asuni (both trained at the Maudsley Hospital), based on this small, villa-type hospital, built in 1946 with the help of the Colonial Development Fund; there are 200 beds, with the possibility of doubling the number when more medical and nursing staff will be available. The hospital is run on open-door principles and is supplemented by a neighbouring security hospital at Lantoro of 200 beds, which serves the purpose of Broadmoor and Rampton.

Aro cannot of course meet the enormous demands of the Western Region. Dr. Lambo has therefore evolved a most interesting and successful scheme whereby two local villages are utilized to accept selected mentally ill patients who, with at least one relative (this is compulsory), rent a room or rooms from the villagers. The patients are either visited daily by the medical staff of the hospital, which is of course always in the background to admit the patient if this becomes necessary, or else they use the hospital as a day-hospital, returning to the village in the evening. In this way some 300 patients, many of them living in parts so distant that treatment would otherwise be denied them, are accommodated and treated in the natural and friendly environment of the village. The villagers, besides the additional income from renting rooms, have the benefit of certain amenities such as electric lighting. A similar village settlement near Accra in Ghana has been described by Dr. E. F. B. FORSTER.

Future Development

The culmination of the conference was a round-table discussion between 21 persons actively involved in psychiatry in Africa at which ways and means for furthering the development of psychiatry were planned. Those privileged to listen to this discussion shared, to some extent at least, the exhilaration and determination of the meeting. Already a chair of psychiatry at Ibadan University is promised, and an association and journal of African psychiatry are planned. There is still a great need, however, for further trained personnel to work in Africa, and a very rewarding experience it should prove.

Immediately following the Conference Lady NORMAN, representing the British National Association for Mental Health, delivered a public address in Lagos, the Federal capital, on the occasion of the inauguration of the West African Association for Mental Health.

Psychiatry in Africa, it would seem, is forging ahead.

SYMPOSIA AT THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

[FROM SPECIAL CORRESPONDENTS]

On December 1 two symposia, with lectures, were held at the Royal College of Physicians of Edinburgh. In the morning the subject was "Genetics in Medicine," in the afternoon "The Study of Normal and Disordered Function of the Small Intestine." The president of the College, Dr. J. D. S. CAMERON, was in the chair.

GENETICS IN MEDICINE

The symposium on Genetics in Medicine was given by members of the scientific staff of the Medical Research Council's Clinical Effects of Radiation Research Unit.

Cell Division

Dr. D. G. HARNDEN introduced the symposium by referring to the increasing importance of genetics in medicine. Major advances had been made recently in many fields of human genetics, he said, and particularly in biochemical genetics and in cytogenetics. Although cytogenetics would be the main subject, it was not to be inferred that this was the only branch of genetics with application in clinical medicine. Dr. Harnden then went on to discuss the normal mechanisms of cell division and some of the errors which could occur during this process. Mitotic division could be regarded as a complex mechanism which ensured that all the cells of the body had the same genetic constitution, and meiosis as a process which, while allowing sufficient genetic variability to occur to maintain the vitality of the stock, ensured the constancy of the chromosome number and genetic constitution of all the individuals of a given species. One should not, however, consider the nucleus in isolation, and Dr. Harnden illustrated the complexity of the interaction between nucleus and cytoplasm by referring to an experiment with *Stentor* (a microscopic animal common in ponds and ditches), where, by grafting, a pre-division individual and a post-division individual were made to divide synchronously.

Abnormalities of the chromosomes, excluding those that could not be detected visually, were of two kinds, those involving whole chromosomes and those involving parts of chromosomes. Polyploidy seemed at the moment relatively unimportant, but aneuploidy in man was fairly common, and it was generally believed that aneuploidy was most often due to non-disjunction during meiosis. The causes of non-disjunction were not known, but some factors which might play a part were cytogenetic abnormality in the parents, maternal age, genes predisposing to non-disjunction, and the observed association of the satellited chromosomes.

Turning to abnormalities of segments of chromosomes Dr. Harnden mentioned that balanced translocations had been found in normal individuals while unbalaced trans-

locations had been associated with abnormalities. Instances of pericentric inversion, deletion, and isochromosomal formation had also been described in man, and these cases, while being of considerable clinical importance, might be valuable in the fundamental genetical problem of chromosome mapping.

Chromosome Analysis

Miss PATRICIA A. JACOBS discussed the problems associated with chromosome analysis. She pointed out that only four of the autosome pairs of the human chromosome could be recognized individually, Nos. 1, 2, 3, and 16, and that the others were recognizable only as groups, Nos. 4 and 5, 6 to 12, 13 to 15, 17 and 18, 19 and 20, 21 and 22. The Y chromosome was recognizable as distinct from the small acrocentric chromosomes of pairs Nos. 21 and 22, but great difficulty was encountered with the X chromosome, which in fact could not be distinguished from the autosomes of pairs Nos. 6 and 7. For this reason the diagnosis of X-chromosome abnormalities could not be made on chromosome analysis alone, and was dependent on the nuclear sex status of the individual and the clinical findings. She illustrated this point by showing that the appearance of an X chromosome, from which part of the long arm had been deleted, might not differ from that of autosome No. 17 or 18. She went on to show how in fact the distinction was made. In Trisomy 17–18 the nuclear sex would be appropriate to the sex of the child, and the deformities were generalized and severe. By contrast in the case of the deletion of the X chromosome the nuclear sex findings were abnormal, and the deformities were confined to the primary and secondary sexual characteristics.

Miss Jacobs went on to discuss the problems of chromosome-count distributions and how the proportion of non-modal cells in leucocyte cultures increased with the ages of the subjects. She discussed the question of artifacts during preparations and also the likelihood that real errors in division occurred. From this she went on to introduce the subject of chromosome mosaicism and the criteria for the diagnosis of chromosome mosaics.

Clinical Abnormalities

Dr. A. G. BAIKIE most ably reviewed the clinical characteristics of the common forms of chromosome abnormality. Starting with males with an abnormal sex-chromosome complement he pointed out that their most constant characteristics were the testicular changes, and that other features, such as anomalies of hair distribution and gynaecomastia, were variable. He demonstrated, by photographs of two XXXY males identified in the same ward of one mental institution, just how different the phenotype could be. One male was tall and markedly eunuchoid with virtually no body hair and a female anterior hair line, whereas the other was short, squat, bald, and with extensive growth of body hair; their only feature in common was the testicular lesion. Dr. Baikie stressed the importance of considering these abnormalities in the diagnosis of primary male hypogonadism.

He also dealt in detail with the clinical findings in the two basic types of sex-chromosome abnormality in phenotypic females, the XO and XXX females, and drew attention to the lack of abnormal physical signs in the majority of XXX females. He then discussed the problem of mongolism, paying special attention to the phenomenon of translocation mongolism together with the particular risk of conceiving mongol children associated with parents who were translocation carriers. Dr. Baikie concluded by demonstrating the clinical features of the two rare syndromes trisomy 13–15 and trisomy 17–18; the main presenting characteristics of these conditions are now sufficiently well recognized as to make their identification at birth relatively easy, certainly easier than that of mongolism.

Human Cytogenetics

Dr. W. M. COURT BROWN delivered the Freeland Barbour Fellowship lecture, his topic being "Cytogenetics in Medicine." He introduced this subject by dealing with the frequency of chromosome abnormalities in the general population, largely illustrating his remarks by reference to the results of the baby-sexing survey which is under way in Edinburgh. He then went on to discuss the necessity for establishing joint prospective studies of these abnormal children in co-operation with paediatricians and endocrinologists. He paid particular attention to sex-chromosome mosaicism, and to how the sexual phenotype, and possibly the mental status, of such individuals might well be dependent on the relative proportions of the constituent cell-lines in the various tissues. Before leaving the subject of the cytogenetics of abnormal development he noted the great value that cytogenetic studies were proving to have for gynaecologists in the management of subjects with primary amenorrhoea, and he introduced the topic of genetic mapping with the suggestion that the study of sex chromosome abnormalities in females was providing evidence for locating genes associated with stature on the short arm of the X chromosome.

Dr. Court Brown stressed that the study of developmental abnormalities was now only one facet of the study of human cytogenetics, and he went on firstly to discuss in general the problems of long-term radiation hazards, and then in particular what is now known of the *in vivo* production of human chromosome damage following radiation exposure. In reference to this he described some of the current work of the Edinburgh Unit, and showed that even as long as 13 years after exposure to therapeutic doses of partial-body radiation gross chromosome abnormalities were often still detectable. The relation of these to the undoubted hazards of such exposure was still uncertain, but he felt that this branch of cytogenetics would ultimately be of some help in unravelling the mechanisms of radiation carcinogenesis. The study of neoplasms, however, was possibly beginning to throw some light on these mechanisms and also on the evolution of tumours from the initial neoplastic change to the stage of clinical cancer. These ideas were elaborated by reference to the cytogenetic study of chronic myeloid leukaemia. Finally he discussed the problems of ageing and carcinogenesis, and how cytogenetics was now contributing valuable information in relation to the possible accumulation of genetic damage with age. He ended by speculating on the possible role of such damage in the initiation of neoplastic processes.

The symposium was concluded by a discussion between the members of the audience and the members of a panel who were Miss P. A. JACOBS, Dr. A. G. BAIKIE, Dr. D. G. HARNDEN, Dr. J. A. STRONG, and Dr. W. M. COURT BROWN.

DISORDERS OF THE SMALL INTESTINE

In the afternoon Dr. R. H. GIRDWOOD delivered the John Matheson Shaw lecture on "Malabsorptive Disorders: Investigations and their Bearing on Treatment." He began by giving a classification of the malabsorptive disorders and discussing some of the difficulties in nomenclature which have given rise to confusion. After describing some of the methods of investigating these conditions, he proceeded to consider theories of fat absorption, the source of faecal fat, and the more relevant biochemical tests. He emphasized that the assimilation of fat-soluble vitamins should not be overlooked when considering fat absorption. The problem of osteomalacia was a complex one, and there were various biochemical investigative methods as well as bone biopsy. The absorption of carbohydrate could be studied by the glucose-tolerance curve or by the absorption of D-xylose. In measuring the absorption of protein he had not found the estimation of faecal nitrogen very helpful nor was the use of ^{131}I-labelled albumin entirely satisfactory. He described his own work on the absorption of

amino-acids from a protein preparation given by mouth and their measurement in the blood by microbiological assay. He recalled the recent studies of the condition of "protein-losing gastroenteropathy," and the methods employed for its detection. In malabsorption there was also a difficulty in the absorption of certain minerals, including iron, and he outlined methods for investigating cyanocobalamin deficiency and also the different ways of measuring the absorption of folic acid. Surprisingly, there did not appear to be a similar difficulty with the absorption of the other water-soluble vitamins.

Clinical Conditions

Dr. Girdwood then discussed the application of these tests to various clinical conditions, such as those which followed gastric operations. He described the rare, but informative, condition of jejunal diverticulosis and the normal and abnormal content of bacteria in the small bowel and the part they played in producing malabsorptive symptoms. There was much to learn from the malabsorptive state produced by surgical resection of different parts of the bowel, and these conditions gave an indication of the usual sites of absorption of various materials. It seemed probable, for instance, that vitamin B_{12} was absorbed in the lower ileum. He next turned to the "sprue" group of diseases and emphasized the great value of intestinal biopsy, and showed some of the appearances as revealed by electron microscopy. Under certain conditions the abnormal appearances in the mucosa might return to normal with treatment. He described the association of malabsorption with malignant tumours of the small intestine and the resulting difficulty in diagnosis. Finally, he briefly discussed the bearing of these investigations on treatment in patients following operations on the stomach, with "blind" loops, fistulae, coeliac disease, etc. He thought that some adult patients with primary malabsorptive disease responded to a gluten-free diet, and that this should be tried if folic acid failed.

Radiology and Pressure Recording

Dr. D. H. CUMMACK next spoke on the radiological investigation of the small intestine. He discussed the techniques available to the radiologist and the appearances in disorders of the small intestine which were associated with malabsorption. He emphasized some of the difficulties in diagnosis and the limitations of radiological methods. Finally, he showed a series of radiographs of conditions which might simulate some of the radiological patterns associated with malabsorptive disease.

Mr. ADAM SMITH described his experiences with pressure recording using the radio-telemetering capsule. He outlined the technique and emphasized that it should be regarded as complementary to recording methods using open-ended tubes or balloons. He discussed the changes in the record produced by changes in orientation of the capsule and how these might be detected and corrected. He concluded with a brief outline of the findings in certain clinical conditions.

Final Panel Discussion

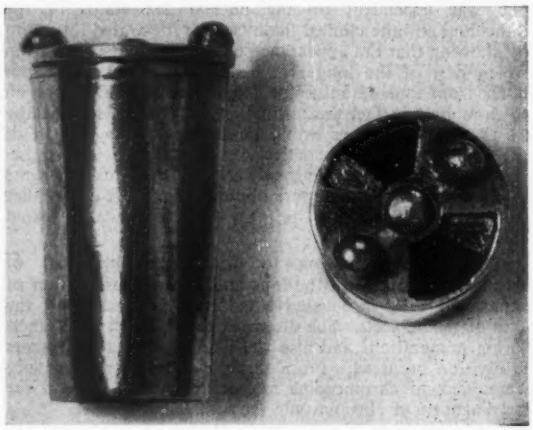
After tea, a panel composed of the two previous speakers with the addition of Dr. W. I. CARD and Dr. A. WYNN WILLIAMS, with Dr. GIRDWOOD acting as moderator, invited questions from the large audience. There was a discussion on the management of steatorrhoea following gastrectomy. The possibility of getting satisfactory samples of bacterial content by intubation of the small intestine was questioned, and there was some disagreement on the value of gluten-free diets in the treatment of adult "idiopathic steatorrhoea." The possibility of gluten sensitivity being due to a specific enzyme deficiency was discussed, as was the role of rancid butter in certain outbreaks of tropical sprue. Finally the panel discussed the significance of 5-hydroxytryptamine in motility of the gut in malabsorptive disorders.

New Appliances

ADJUSTABLE VALVE FOR TRACHEOSTOMY TUBE

Mr. S. LIVINGSTONE SPENCER, honorary surgeon, Sydney Hospital, writes: When a patient has laryngeal obstruction which, though only partial, necessitates the use of a tracheostomy tube, it has been found advantageous to control the amount of air passing through the tube. The following is a description of a case in which an air-controlling device proved useful.

Case History.—A woman of 60, who had had a paralysed right vocal cord since a thyroid operation in 1918, underwent a second operation in 1953. After this the left cord was paralysed, its function being recovered about seven months later. As it was evident a few hours after the operation that the glottic opening did not provide an



adequate airway, a tracheostomy was performed. This permitted comfortable breathing, but the cold air entering the tracheostomy tube led to the production of a troublesome amount of mucus. Also, as is usually observed, unless the patient occluded the tube with a finger she was unable to phonate. The patient's husband, a skilled watchmaker, suggested and made some small adjustable silver valves to fit the end of the tracheostomy inner tube. They were tapered to fit snugly and to prevent their inhalation. Control of the amount of air passing through the tracheostomy tube greatly increased the patient's comfort; the production of mucus was reduced to negligible proportions; while a serviceable degree of phonation was possible without the patient having to place a finger over the tracheostomy tube. Seven months after the second thyroidectomy the patient's left cord had resumed its normal movements, and the tracheostomy was allowed to close.

Description of Device.—The patient's husband made three valves, each measuring 15.8 mm. in length, with the wider end having a diameter of 9.3 mm. and the other end 7.5 mm. Two tiny knobs facilitated rotation of the valve in order to select the desired degree of supplementary airway. In the above instance the tubes were used in conjunction with a No. 28 Fuller's tracheostomy tube.

A copy of the booklet *The Scope and Limitations of Orthodontic Treatment*, prepared by the Standing Dental Advisory Committee for the Central Health Services Council and the Minister of Health, is to be sent to every National Health Service dentist in England and Wales.

To-day's Drugs

With the help of expert contributors we publish below notes on a selection of drugs in common use.

"Jectofer" (Astra-Hewlett).

Composition.—This is an isotonic neutral solution of an iron–sorbitol–citric-acid complex stabilized with dextrin. It is stable in plasma and contains 50 mg. of elemental iron per ml.

Pharmacology.—The iron in this complex is available for synthesis of haemoglobin and reconstitution of depleted reserves of iron. After deep intramuscular injection the complex is rapidly absorbed by both blood and lymphatic vessels, approximately 70% of the dose being removed from the injection site within three hours. After rising temporarily the iron content of plasma and lymph returns to the previous levels after about four hours owing to uptake of the complex by reticulo-endothelial cells. About 30% of the injected iron is excreted in the urine, mostly during the first few hours after injection, the percentage excreted being similar after doses containing 25, 50, or 100 mg. of elemental iron. The urine may appear dark in colour during the period of excretion, but renal function is not adversely affected. Clinical trials of jectofer in cases of iron-deficiency anaemia have shown effective utilization of about 60% of the injected dose.[1]

Therapy.—The indication for use is iron-deficiency anaemia which cannot be satisfactorily treated by oral iron. Daily doses of 2 ml., each containing 100 mg. iron, are recommended. A test dose is not needed. The total dose required may be calculated for individual patients according to the existing deficit of haemoglobin, on the basis that 250 mg. elemental iron should increase the haemoglobin level by about 1 g. per 100 ml. of blood. An additional 500–1,000 mg. should be added to the calculated total required to raise the haemoglobin to normal to allow for incomplete utilization and to aid in replenishing iron reserves. Use of jectofer is contraindicated in the presence of nephritis, polyarthritis, or severe hepatic dysfunction.

Side-effects.—These appear to be minimal and infrequent. Apart from occasional slight discomfort at the site of injection and a mild transient disturbance of taste for a few hours after injection no local or systemic toxic reactions have hitherto been reported in clinical trials. In animal experiments the complex appears to be virtually devoid of carcinogenic activity[1] and antigenic properties.[2]

N.H.S. Basic Price.—2-ml. ampoules, 5 for 15s. 3d.

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[2] Svärd, P. O., *J. Pharm. Pharmacol.*, 1961, 13, 641.

"The [National Association for Mental Health] has sometimes been accused of concentrating too large a part of its endeavour on the community services, and doing too little to help the hospitals with their problems. It is, however, precisely because the [N.A.M.H.] has been conscious of the strain placed on hospitals by the sketchiness of local authority mental health provision that it has seen its most important role for the present to lie in educating public opinion both to accept the mentally disordered in the community and to press for money to be spent on improving local authority services and in particular in seeing that trained workers are attracted to it. Without this, in the words of Professor TITMUSS: 'We shall drift into a situation in which, by shifting the emphasis from the institution to the community, we are transferring the care of the mentally ill from trained staff to untrained or ill-equipped staff or to no staff at all.'" (*Annual Report 1960–1961*, National Association for Mental Health.)

Correspondence

Because of heavy pressure on our space, correspondents are asked to keep their letters short.

The Case of the Plastic Surgeons

SIR,—One is greatly relieved that the charges of advertising against the seven plastic surgeons were unproved (*Supplement*, December 2, p. 223), but it is distressing to find that the Disciplinary Committee found it necessary to caution them and it is even more distressing to read your leading article (December 2, p. 1483) supporting this censure.

In evidence Professor T. P. Kilner said that in an ideal world the starting point for a patient was to go to a general practitioner, but he did not consider that avenue always sufficient. He is, of course, right. I have no doubt that some general practitioners have the same sort of prejudice against cosmetic surgery as they have against psychotherapy and psychiatric treatment in general, and therefore no doubt refuse to refer their patients, or at least discourage them so severely that they do not get the treatment they need as speedily as they should. Mr. D. N. Matthews noted in evidence that because he now only receives patients from general practitioners distress is caused on occasions. This is intolerable. All members of the medical profession are morally obliged to help the sick according to their skills when a person seeks their help. The fact that a prejudiced doctor or one ignorant of the treatment available stands in between is surely deplorable. Mr. A. Rainsford Mowlem rightly says all sorts of people send patients and we have no right to say we will not give them help when they ask for it.

The old laws of medical ethics are not divinely inspired. Some countries, as your leader rightly points out, have an entirely different system. It is not always true, as has been made clear in this case, that the general practitioner is the *only* person really fitted to advise the patient about his or her need for this or that treatment. In fact, this sentence in your leader is a gross distortion of the facts. One wonders how many patients with lumps would not have died if they had had direct access to a surgeon. One again wonders how many suicides might have been averted if depressions had not been misdiagnosed. Many other examples could be given. It is the use of the word "only" that is presumptuous and against which I am protesting. The rest of your leader, in fact, admits that this sentence is a gross oversimplification because it talks about the doctor's dilemma, but then goes on and in effect says, "Never mind, a rule is a rule which must be kept for its own sake" whether the public protest or the patient suffers.

May I repeat it is clear from this case that the ethics governing the relationship between general practitioner and consultant need revising because the role of both has changed. In my view a patient has every right to go straight to a specialist if he wishes. The normal channels should indeed be through the general practitioner, but there are a small proportion of people who suffer, certainly in the psychiatric field, and, as has been made clear, apparently in the realms of cosmetic surgery, because of the ignorance and prejudice of their doctor. These people must be able to get to a specialist, and associations and specialists have a right to send the

name of reputable specialists practising in the locality. The specialist receiving such a patient is free, of course, to refuse or accept. If he agrees to see, he should most certainly inform the general practitioner concerned, but even that is a rule that should be bent on occasions. Luther rightly said that rules were made to be bent and that the more rules there are the less justice there is.

In brief then, Sir, I consider the action of the British Association of Plastic Surgeons entirely justified, and the views of the Disciplinary Committee and your *Journal* show that both bodies are out of touch with the needs of suffering people in this day and age whom, as a profession, we are supposed to serve.—I am, etc.,

The Towers Hospital, Leicester. H. B. KIDD.

Examination in General Practice

SIR,—I note with regret that the College of General Practitioners (December 2, p. 1490) has decided to introduce an examination as one of the criteria to be taken into account for membership of the College. I write as a friend and admirer of the College and its aims.

Membership of the College is a distinction to be aimed at and to be valued. It should have the twin purposes of encouraging all that is best in general practice and of recognizing those who have most nearly achieved it. I cannot believe that to add yet one more examination to our examination-ridden profession is the right way to achieve either.

Surely the right way is to recognize good work. This can be done and has been done for centuries by boards of electors to university posts, to hospital staffs, as well as to the Fellowships of the Royal College of Physicians and Royal Society. The choice is difficult, errors are made, friends rather than enemies are chosen. But on the whole merit is rewarded. Perhaps the recognition of merit in general practitioners is more difficult, but if an objective test is required, would not a scrutiny of the doctor's records or the letters he writes about his patients serve? Is the doctor who takes a correspondence course for an examination, or the one who is devoting himself to the interests of his patients, the man the College would choose?—I am, etc.,

Radcliffe Infirmary, Oxford. GEORGE PICKERING.

SIR,—It has happened at last—that which I have been expecting ever since the formation of the College of General Practitioners. At their annual general meeting on November 25 they decided (December 2, p. 1490) by 126 votes to 15 to hold an examination in general practice. It has been put to me, as an incentive to join the College, that when the inevitable examination materializes then as Founder Member one would automatically be excused the examination. Presumably the Founder Members will be granted the magic letters M.C.G.P. or some such without having to take the proposed examination. I am interested to know whether this will now be the case and also how many would have voted for the resolution if they thought it would not be so.

It is an astonishing fact that when a new organization has become established a number of its members seek to make it exclusive. I understand that some of my colleagues have been vetted to see whether they are suitable to become Members of the College. What are we coming to? We are all qualified doctors and have already been vetted by our examiners to determine whether we are fit to be let loose upon the public. I may add, to avoid any suggestion of sour grapes, that I have made no move to become a Member of the College.—I am, etc.,

Swansea. JOHN LEWIS.

What Price the N.H.S.?

SIR,—I read with a certain degree of perverse enjoyment your leading article under the above caption (November 11, p. 1272), and thought once more of the several reasons, which, although perhaps not so clear or definite at the time, have become crystal clear since, causing me to pack up house, baggage, a wife, four children, and a dog, and cross the Atlantic in 1949. I had viewed with considerable misgivings the wholesale advance of the Welfare State, so seemingly inexorable in those days, before deciding to take that plunge into the unknown.

I remember so well Dr. Ffrangcon Roberts's most sensible writings in the columns of the *B.M.J.* at that time.[1] As a "seer" he has proved uncannily correct in his predictions, and I thoroughly agree with his statement that "those who think that medicine is above economic laws are destined to have their illusion shattered," for this is the very kernel of the truth.

Here, in the U.S., where the Ship of State is sailing more slowly yet as surely into the Welfare State Haven, we are presently concerned with the problems of the ageing. The health component of this complex is an important one, because 11% of the population of the country are over 65 to-day (16 million), and it is estimated that there will be 32 million over 65 years of age in the next 40 years. It is predicted that the ageing may number as many as 1 in 10.

Planning to meet the health needs of the ageing is important for political as well as for humanitarian reasons, for they are forming a most important pressure-group. As a result the Kennedy Administration is advocating Government-aided medical-care coverage through Social Security (old age and survivors insurance) under which the Government would deduct a personal "tax" which will help to underwrite some of the real cost of providing comprehensive health-care services. The American Medical Association, seeing this approach merely as the advancing and thickening wedge of government medicine, is advocating reliance on good old free-enterprise methods with voluntary health insurance and some Government aid. The A.M.A. believes that such planning should be directed to the development of locally operated plans which are adjusted to local realities, rather than a wholesale across-the-board national plan.

I write this to impress on your readers that social experimentation along the lines of the N.H.S. is appearing on an increasing scale in this country and is not being welcomed by those who believe that Government should be in the business of providing health services under taxation only to the point that is necessary, according to the realities of the situation from locality to locality and state to state. Thus, for example, the conditions in Louisiana are not the same as those pertaining in Massachusetts.

For my own part, I believe that such Government services as are necessary should be adequately financed (but not over-financed), staffed, and provided with the

tools (including facilities) to do an adequate job. Moreover, I believe that there is great strength in the diversity of approach here in America, where free-enterprise health services, voluntary health insurance, and Government health services share in the provision of needed services to the several classes of the American community. Here in Cincinnati, for example, the individuals on public assistance and those who are medically indigent receive excellent health-care coverage through the private physicians, through the hospitals (particularly the tax-supported general hospital), through a veritable galaxy of voluntary health agencies, and through the health clinics of the city's health department. No one needs to go without needed care in Cincinnati, as the recent Sabin oral vaccine programme well illustrates. We are achieving this at the local level, with, of course, some financial aid from either the state or federal Governments, which comes to the city through the welfare department, under so-called grants-in-aid.

During the last decade under this "mixed" system, I have seen really magnificent hospitals built, many of them with Government financial aid in part, and many without. I have seen the growth of medical services of all kinds, and, although it is true that there is still much headway to be made in improving existing services in order to reach all classes of citizens in the country as a whole, on the other hand many cities and regions have attained an extremely high level of health care which can compare favourably with the best in the world. Perhaps the one item which stands out above all else in which more imaginative steps must be taken to make improvements is the area of so-called "catastrophic" illness, whereby a family without proper insurance provisions can be financially walloped to a degree that would seem extraordinary to those enjoying the undoubted "blessings" of the N.H.S. in this particular respect. But America will lick this problem, and indeed many insurance plans already include catastrophic and long-term illness coverage of generous degree.

I cannot but agree with your editorial endorsement of Dr. Lees's statement that "a monolithic structure financed by taxation" is ill suited to meet the challenge of quickly advancing medical progress. The almost unalterable fixity of bureaucratic methodology, however honourably directed, simply stultifies progress, for it splutters and chokes when the unusual is presented. The really amazing thing about the N.H.S. story is that it has worked as well as it has. The reason for this is underscored in your own leader—namely, that, as Dr. J. R. Seale has pointed out, the N.H.S. has been living "on the material, human, and moral capital built up by past generations."

As one who has felt the wrench of leaving the country one loves (Scotland—and what Scot does not love his native land?) by joining that river of emigrants which has been flowing from Scotland since the days of the '45 and before, I believe that this was the right decision for me. My reasons for leaving remain the same: (1) Basic disagreement with the Leviathan Welfare State. (2) Basic disagreement with the philosophy that only the Government can and ought to be the "total" provider of adequate and equitably distributed medical-care services. (3) The apparent betrayal of medicine, by those who should have known better, and fought harder, because they saw perhaps the immediate benefits, and their share, of this "mess of pottage" in the provision of the N.H.S. as originally enacted. (4) The "seizure" of the practices under an unfair and arbitrary system of compensation. (5) The "demotion" of the general practitioner from the hospital, when on July 1, 1948, he could no longer by law attend his own patients in what often was "his own" hospital, at least in part. In regard to this last, I note with a wry smile that the G.P. is coming back into his own, and may even, in some cases, be granted the belated privilege of treating his own cases, under supervision, in the hospital wards once more. The road back will not be easy.

But if the N.H.S. can even partially be "denationalized," and free-enterprise approaches to providing care encouraged, this may strengthen rather than weaken the British health-care provisions in general. With greater decentralization and greater local autonomy, the monolithic status of the Ministry may be reduced in at least some of its aspects, or so it would appear to one viewing it from so far off.—I am, etc.,

City of Cincinnati, Ohio. KENNETH I. E. MACLEOD.

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Dermatitis from Penicillin in Bulked Milk

SIR,—Drs. H. R. Vickers, Suzanne Alexander, and L. Bagratuni (November 25, p. 1433) in addition to suggesting methods of prophylaxis of dermatitis due to penicillin in bulked milk supplies point out that many cases of undiagnosed urticaria may originate in this way. In this respect the following case, which was seen by me a few days after the report by Drs. Peter Borrie and John Barrett (November 11, p. 1267), may be of interest:

The patient, a well-built schoolboy aged 13, had the previous day developed widespread giant urticaria affecting his face, trunk, and limbs. There was no past history of urticaria in the patient or other members of his family and he was otherwise fit. His mother said that he had received penicillin on a number of occasions without ill effect, the last time being two years ago. The father, a farmer, kept a herd of cows and the family obtained its milk from this source. Some days before the boy developed his urticaria one of the cows had received a standard injection of penicillin for mastitis. Milk from this cow was still pooled with that from the rest of the herd, and the boy continued to drink his usual daily pint of milk.

My suspicions were communicated to the patient and his mother, antihistamines were prescribed, and milk was excluded from his diet. The urticaria gradually subsided over the next three days, and at his next out-patient attendance a week later the boy was given some milk containing 200 units of penicillin. After one and a half hours swellings started to appear on his forehead and neck; he was then given an injection of 800,000 units of penicillinase, and, although further urticarial weals appeared on his back, his mother reported that he had cleared completely six hours later.

Zimmerman[1] reports four such cases proved by penicillinase cures and states that, in 1957, 11% of American milk supplies were contaminated with penicillin in measurable amount. Although there have been very few reported cases of this type in this country the American figures of penicillin milk contamination raise the question of the comparable British figure; also to what extent this contamination is responsible for sensitizing people to penicillin or provoking reactions in those already sensitized.—I am, etc.,

Hove, Sussex. PATRICK HALL-SMITH.

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Withdrawal of Thalidomide ("Distaval")

SIR,—I must protest against the action of the Distillers Company in withdrawing "distaval" (thalidomide) from the market (December 2, p. 1499). If this had been in response to the paper by Drs. Pamela M. Fullerton and Michael Kremer on neuropathy following the use of thalidomide (September 30, p. 855), it might have been regarded as justifiable; to do so on the grounds of two unconfirmed reports from alien sources of a possible—not proved—association of thalidomide given in early pregnancy is quite irresponsible. As Dr. E. F. Swift says (December 2, p. 1498), distaval is non-lethal even in very large doses: it is therefore the only hypnotic safe to give to patients who are bad suicide risks (and these patients are among those who most often need hypnotics), and to those parents who are incapable of either locking up drugs or keeping their children under proper control. Being tasteless and odourless, it is the ideal sedative for children and cats, since it can be crushed up and given in milk or food. It is also an excellent sedative for the elderly and other patients who cannot tolerate barbiturates.

Hitherto, there has been no compulsion for doctors to use or abjure any particular hypnotic: any doctor alarmed by these unconfirmed reports is at liberty to prescribe other drugs for pregnant females, but I can see no reason why those patients for whom thalidomide is the sedative of choice should have to revert to less suitable drugs for the problematical benefit of a very small proportion of the population. It would be just about as logical to withdraw all *x*-ray machines because radiography in early pregnancy may induce leukaemia in the child. Have we lost *all* sense of proportion?—I am, etc.,

Eastbourne, Sussex. PAULA H. GOSLING.

Progestogens and the Foetus

SIR,—Your annotation (November 4, p. 1205) suggests that experimental observations in rats may have some relevance to the problems of progestational therapy in women during pregnancy. Contrary human evidence, however, suggests that the rat observations may be irrelevant. It is known that there are major species-differences in the field of reproductive physiology, including oestrogen and progesterone requirements and effects and the pathways of steroid metabolism. You comment that the Clauberg assay unfortunately fails to parallel activity in the human. The rat seminal-vesicle assay is also misleading as an index of weak androgenicity, as it has been shown that oestrogens cause weight increase.[1] Oestrogenic activity is also known to influence the development of virilization in the female rat foetus.[2] I agree that the virilizing action of oral progestogens on the female rat foetus is unfortunate for rats. Although norethisterone and some other oral progestogens have a virilizing action in the human, there is ample evidence for the safety of norethynodrel, which differs from norethisterone in being oestrogenic and not androgenic in its effects in man, as has been particularly noted when high doses of both compounds have been used in the treatment of endometriosis.[3] Norethynodrel appears for other reasons to be the progestational agent of choice for administration during pregnancy.

During the last six years norethynodrel has been used extensively in women with a variety of disorders of pregnancy maintenance,[4] including inadequate luteal phase infertility[5 6] and recurrent and threatened abortion.[7] Following the increasing number of reports of virilization of the female foetus attributable to norethisterone and other progestogens, there has been a greater tendency to use norethynodrel, which is oestrogenic and not androgenic, and there has been no evidence of any increased incidence or foetal abnormality. The incidence in one series with norethisterone was 18%, 15 cases being encountered amongst 81 female infants.[8] Maternal virilization was also noted. In this study there was a control series in which one example of this abnormality was noted in 95 children. In contrast with norethisterone, there have been several series of cases treated with norethynodrel during pregnancy, in which the incidence of foetal virilization has been nil.[4 5 6 7] Grumbach, who has reported one instance in which this abnormality has occurred following the use of norethynodrel,[9] has subsequently reviewed the available information and has expressed the opinion[10] that this may have been a chance occurrence, as occasional examples are likely to occur naturally in any large series of women with disorders of pregnancy maintenance.

The role of progesterone deficiency in disorders of pregnancy maintenance remains uncertain, but it is known that the hormonal factors necessary are quite different in man from those operating in several animal species. Oestrogenic administration has an adverse effect upon the early stage of pregnancy in rats[11] by inhibiting nidation and/or foetal development during the first few days after mating. There is no evidence of any such action in man. Oestrogenic activity inhibits the pregnancy-maintaining effect of progestins in ovariectomized rabbits, and for this reason norethynodrel, which has oestrogenic as well as progestational activity, is inactive in the rabbit assay.[12] This is probably irrelevant to the human problem. (The fact that norethisterone, which is androgenic rather than oestrogenic, is also inactive in the rabbit assay has been a puzzling anomaly, but it is now known that an oestrogenic impurity may be present in the production of norethisterone to the extent of amounts up to 0.6% of the potent synthetic oestrogen ethinyloestradiol 3-methyl ether,[13] which may account for this anomalous observation and for various reports in the literature suggesting that norethisterone is oestrogenic.)

Whatever view may be held about the value of progestational therapy in human pregnancy disorders, the progestogen selected should logically be one which is capable of maintaining a prolonged pseudopregnancy in the human. It is known that norethynodrel by mouth is effective and superior in this respect to parenteral treatment with esters of 17α hydroxyprogesterone,[14 15] which have not been shown to possess comparable potency, even when large injections are given, and I cannot, therefore, see any logical reasoning for abandoning safe oral therapy with norethynodrel in favour of parenteral treatment with 17α hydroxyprogesterone esters, whose potency may be sufficient to provide substitution for the levels of progestational activity encountered in the secretory phase of the menstrual cycle, but inadequate substitution for the higher levels of progestational activity characteristic of normal pregnancy.—I am, etc.,

High Wycombe, Bucks. G. R. VENNING, Medical Director, G. D. Searle & Co. Limited.

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Research on Mental Defectives

SIR,—The implications of the article by Dr. A. W. Johnston and his colleagues on the triple-X syndrome (October 21, p. 1046) are deeply disturbing. As a doctor and as a woman, I feel bound to protest against the use of mentally defective patients, people whose condition is already sufficiently pitiable, as human experimental material.

The three women cited, all low-grade mental defectives, were subjected to laparotomy for no better reason than that, to quote the authors' bald statement, "it was decided to investigate the genital system of our patients as adequately as possible." From this investigation the experimenters were able to conclude that the three women were "potentially fertile." Of what conceivable value is this piece of information in the circumstances? Is it seriously suggested that they should be encouraged to become pregnant? Perhaps these three cases have not yet been investigated as fully as possible.

In accordance with accepted etiquette the women have been photographed with their eyes obscured. I had always considered that this formal feint at anonymity represented a gesture of respect towards the individual as a person. It is, to say the least, anomalous to find these anonymous pictures featured blatantly alongside photographs of the patients' organs displayed at utterly unjustifiable abdominal operations. If the inmates of homes for mental defectives, in America or elsewhere, are henceforward to be regarded as convenient material for the experimental surgeon it is as well that the public should become aware of this dubious development in medical ethics.—I am, etc.,

CATHERINE M. U. MACLEAN.
University College Hospital,
Ibadan, Nigeria.

SIR,—We are grateful to Dr. Catherine M. U. Maclean and others for drawing our attention to the fact that no mention was made of obtaining consent from the parents of our patients for the investigation reported in our paper (October 21, p. 1046). We had naturally assumed that such an obvious prerequisite would not require mention. The decision to operate was taken after very careful consideration, and full written consent was obtained from responsible relatives in each case. Although we went to considerable lengths to explain to the relatives what we considered were the indications for surgery, the responsibility for this decision is ours. It is our experience that the relatives of such patients are extremely grateful to find that at last members of the medical profession are beginning to take an interest in the causes of mental deficiency. They are normally only too anxious to co-operate, although they understand that the information obtained from such investigations may be expected to be of more value in increasing knowledge of the causes of mental deficiency rather than being of immediate advantage to their mentally retarded child.

Recent evidence suggests that the frequency of the Triple-X syndrome at birth is about 1.33/1,000. We feel that it is not too presumptuous to claim that information leading to an understanding of the causes and transmission of this condition is not entirely value less. We would like to assure Dr. MacLean and others who may criticize our decision that these investigations were not undertaken lightly nor without due consideration.—We are, etc.,

University College Hospital, London. A. W. JOHNSTON.
M. A. FERGUSON-SMITH.
Johns Hopkins Hospital, Baltimore, Maryland, U.S.A. HOWARD W. JONES, jun.
GEORGEANNA JONES.

Experiments on Animals

SIR,—Dr. W. Gover's letter (December 2, p. 1498) appears sensible on first reading and one to be commended. But does it not beg the basic problem involved in all animal experiments? Is it right, a moral issue, for man for his own benefit, or hoped-for benefits, to obtain them as a result of experiments involving fear and pain in any animal? Everyone knows the results so far have been easier and longer lives for millions of men. Is this the answer to the moral issue?—I am, etc.,

Church Stretton, Shropshire. G. LISSANT COX.

SIR,—As Dr. W. Gover says (December 2, p. 1498) most medical men are not antivivisectionists. If they were, they would have to condemn the majority of their colleagues, who make use of knowledge and remedies derived from animal experiments. But the real issue is not *whether* animals should be used in this way but rather *how* they should be used. It is a sad comment on the antivivisectionist movement that not only has it failed in every way to be of practical benefit to animals which might be abused by careless experimentation, but it has obscured the real issue to the extent that Dr. Gover's perfectly respectable argument may be dismissed as emotionalism.

The ultimate utility of an investigation is largely irrelevant to the argument, because this can seldom if ever be known in advance. It is, however, necessary to recognize the obligation of humanity that all investigators owe to the animals they propose to use in their researches. In my view, this obligation may be expressed in the following terms. Every experiment likely to cause pain or discomfort to the animal must have a good and sufficient reason for its performance, the more the pain the more compelling the reason; and suffering (intelligently presumed, so as not to be sidetracked by insoluble questions about the reality of pain in animals) beyond a certain degree of severity, related to the prevailing climate of humane opinion, is not justifiable on any score.

One more point needs to be made. The assessment of the severity of suffering in animals is far from easy, and is certainly not to be lightly made by those unfamiliar both with animals and with experimental techniques. It is, in short, a matter for the trained

observer, and this fact has been recognized in this country by the appointment of Home Office inspectors, who are expected to exhibit the highest standards of judgment in this respect. The degree of their success is a measure of the protection offered to legitimate research and of the decent treatment of animals. Because it is not feasible to have every experiment inspected all the time, the experimenter has, in practice, to be the judge of what is permissible most of the time; but under the British system he is subject to independent arbitration of his judgments at all times, which is about the best way that could be devised of keeping his judicial faculties sharpened.—I am, etc.,

Carshalton, Surrey. W. LANE-PETTER.

Goodpasture's Syndrome

SIR,—In several recent communications dealing with Goodpasture's syndrome[1-4] and in your recent annotation (July 29, p. 298) it has been suggested that steroid therapy is of no avail in this rapidly fatal condition. As a result of our experience in nine patients with this syndrome[5] we feel that there is every reason to adopt an optimistic attitude about the effectiveness of steroid therapy provided that this is used before too much destruction of renal tissue has occurred.

We have reviewed the reported cases which fulfil the clinical criteria of recurrent haemoptysis, hypochromic anaemia, haemorrhage into the pulmonary parenchyma, and glomerulonephritis. In addition to our own nine cases we have found 29 in the literature and of this total of 38 cases all but four have died from a rapidly progressive renal lesion. The four patients who are alive include one reported by Rusby and Wilson[2] and three of our own cases. All four have had at least 40 mg. prednisone daily as an initial dose, and have been continued on steroid therapy for months with gradual reduction of the dosage. In all four treatment was commenced before there had been marked deterioration of renal function. In our cases we have studied the renal lesions in renal biopsies done before and after treatment with steroids. These show apparent arrest of active lesions, and although focal glomerular scarring persists there is no evidence of progression of the lesion. Two of our patients are well 11 months and one year after the acute episode, the third has shown complete clinical remission but his illness started only three months ago.

Apart from this group of patients who are alive and well, there is further evidence of arrest of the acute disease process in the other patients. Of the total number of 38 cases quoted 17 received some steroid therapy. Four of these are alive, and of the 13 who died the average survival after the appearance of manifestations of renal involvement was 107 days. This is in striking contrast to the average survival time in the untreated group, which was only 23 days after renal abnormalities were noted. In addition to this apparent increase in survival time in the treated cases the repeated haemoptyses ceased as soon as treatment was started. Radiological shadows also cleared rapidly and did not recur while adequate treatment was continued. Haematuria rapidly improved and disappeared in most cases. In two patients a sudden large reduction in dosage of prednisone was followed by an immediate recurrence of haemoptysis and haematuria. In one of these patients the considerable haemorrhage into the lungs at this time was the cause of death.

In the light of these facts we believe that steroid therapy should always be used in this otherwise rapidly fatal condition. Early diagnosis and treatment are essential because of the fulminating nature of the disease. We suggest that at least 40 mg. of prednisone per day should be used as an initial dose and that this should be reduced very slowly to prevent reactivation of the renal and pulmonary lesions which may prove fatal.—We are, etc.,

KENNETH F. FAIRLEY.
PRISCILLA KINCAID-SMITH.

Department of Medicine,
Royal Melbourne Hospital,
Victoria, Australia.

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Antitetanus Immunization

SIR,—We feel compelled to take issue with Dr. Pincus Catzel over his statement (November 25, p. 1434) that there is no evidence to support the use of antitetanic serum in the prevention of tetanus following injury. It is true that to show that his statement is incorrect one must turn to work done in the first two decades of this century, but though this work may have been overlooked it has never been invalidated.

Topley and Wilson in their *Principles of Bacteriology and Immunity*[1] state categorically that from animal experiments there is not the least doubt of the protective value of antitetanic serum, and they go on to give statistics from the 1914–18 war to show the remarkable drop in the incidence of tetanus which followed immediately on the introduction of antitetanic serum. This was introduced first in the middle of October, 1914. In that month there were over 31 cases of tetanus per 1,000 injuries. In November the number dropped to just under 2 per 1,000; in December to under 1 per 1,000. This figure was more or less maintained until the end of the war. Apart from the dramatic fall in the number of cases they also show that the incubation period of the disease was lengthened from 11.8 days in 1914 to 50 days in 1918–19. This increase in length of the incubation period is, of course, associated with the diminution in the severity of the disease.

Another Table, on p. 1762, shows the mortality in protected and unprotected cases of tetanus (that is, passive protection): of 899 protected cases 203 (22.6%) died, while of 559 unprotected cases 298 (53.3%) died.

We do not find any reason to doubt this evidence, and it is supported by earlier work in the United States of America quoted by H. J. Parish in *Antisera, Toxoids, Vaccines, and Tuberculins*.[2] This quotation from Kolmer and Tuft[3] states that deaths from tetanus fell from 100:1,000 from firework injuries on Independence Day, 1903, to 3:1,000 in 1913 and 0:1,000 in 1914 following the introduction of prophylactic antitetanic serum.

We feel that Dr. Catzel's wish to ban antitetanic serum from casualty departments runs contrary to the evidence available and if widely accepted would surely lead to an increase in the incidence of tetanus and perhaps also to a rise in the mortality rate of the disease. We can accept more readily Dr. G. E. Fulford's attitude (November 25, p. 1434), but still feel that there is very good evidence to support the giving of prophylactic antitetanic serum to all unprotected patients with recent injuries who have not had a previous serum injection.

While we are in no doubt that wholesale active immunization is preferable and should be actively encouraged, we consider that in the meantime the omission by casualty officers of passive protection might lead, in view of the massive evidence for its efficacy, to adverse legal decisions, and we would point out again that passive protection should always be followed by active immunization, although this too carries a minor risk of anaphylaxis.—We are, etc.,

DAVID CARO.
P. W. KIPPAX.

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3 Kolmer, J. A., and Tuft, L., *Clinical Immunology, Biotherapy and Chemotherapy in the Diagnosis, Prevention and Treatment of Disease*, 1941. Saunders, Philadelphia and London.

SIR,—I was horrified to see the letter written by Dr. Pincus Catzel (November 25, p. 1434), saying that antitetanus serum should be banned from casualty departments and replaced by tetanus toxoid. Following a suspect injury in anybody who has *not* received adequate active immunization against tetanus, there is no alternative to immediate passive prophylaxis with tetanus antitoxin (A.T.S.). The rare occurrence of anaphylaxis can be controlled by the use of test doses and instant adrenaline if necessary, and surely the development of serum sickness is not to be compared with the possibility of tetanus.

The value of A.T.S. is beyond doubt. In America the use of antitoxin reduced the number of deaths from tetanus on Independence Day from 100 per 1,000 injuries in 1903 to 3 per 1,000 in 1913 and 0 per 1,000 in 1914. In the 1914–18 war the use of antitoxin reduced the incidence of tetanus from 8 per 1,000 wounded to 1 per 1,000 wounded.[1] Notwithstanding its limitations antitoxin still remains one of the essentials in the treatment of tetanus. Its value in the clinical disease has been clearly established in trials in Nigeria and Jamaica.[2] In patients receiving antitoxin the mortality rate was 49% ; in patients not so treated it was 76%.

So far as the use of tetanus toxoid is concerned an interval of two to four weeks between the first two doses is far too short to produce an adequate secondary response. This interval should be at least six weeks. Most certainly tetanus toxoid is *safe* if given instead of antitoxin, following a tetanus-prone injury—but quite valueless in the non-immune subject. Unfortunately suggestions such as those made by Dr. Pincus Catzel may have far-reaching and dangerous effects. Junior hospital staff, and others, frequently think that anything in print is "gospel."

We are all striving to produce a high level of active immunity against tetanus in the population, and here, as in many other hospitals, we offer toxoid at the correct intervals to everybody who has attended the casualty department and received antitoxin. However, at the present day antitoxin must still remain a sheet-anchor both in the prophylaxis and treatment of tetanus.—I am, etc.,

KEITH J. RANDALL.

Orpington Hospital,
Orpington, Kent.

REFERENCES

1 Parish, H. J., and Cannon, D. A., *Antisera, Toxoids, Vaccines, and Tuberculins in Prophylaxis and Treatment*, 1961, 5th edition, p. 58. E. and S. Livingstone Ltd., Edinburgh.
2 Brown, A., Mohamed, S. D., Montgomery, R. D., Armitage, P., and Laurence, D. R., *Lancet*, 1960, 2, 227.

SIR,—I have recently had a perturbing experience. A 10-year-old boy cut his thigh on some rocks, was sutured in casualty, and that evening given 1,500 units of antitetanus serum by his G.P. Three weeks later he died of tetanus. He had had no A.T.S. before nor was he immunized against tetanus. When in hospital he was given a large dose of antitoxin after a test dose. He reacted violently to this therapy. The A.T.S. given by his G.P. therefore acted only as a sensitizing dose and in no way therapeutically.

The problem of A.T.S. and tetanus is recurrent. A vast amount of A.T.S. must be given more for fear of legal action than on the supposition that the patient might be harbouring tetanus. An equal amount is probably given with the honest thought that at least there will not be a risk of tetanus from that injury. There are two questions that this episode seems to raise: (1) Is there any point in giving A.T.S. in the surgery or casualty? If so, how much? (2) How real is the bogy of legal action?—I am, etc.,

M. W. TISDALL.

Plymouth, Devon.

Personal Medical Records

SIR,—The correspondence following our appeal to doctors to disseminate medical information (September 9, p. 705) has reinforced the view that everyone needs to carry on his person, at all convenient times, such data as may be useful, sometimes even life-saving, in an emergency. These records must be accessible, concise, legible, readily decipherable, and unambiguous; the abbreviations adopted by the *British Pharmacopoeia, 1958*, for sera and vaccines have obvious advantages. Doctors should ask or search for these records, in the expectation that they will often be produced (if their own propaganda is successful).

Various suggestions have been made as to how such information should be carried. Diabetics in this country can obtain cards and disks, and the idea of carrying records should be extended to everyone. The exact form of recording is obviously less important than that a transportable record shall exist. The following suggestions may be helpful:

(1) A personal record card that can be slipped into a wallet should probably be about the size of a railway season ticket, and it should be in a plastic case to make it last longer. Most all-purpose record cards in current use are too large for convenience in daily transport.

(2) The front or back pages of pocket diaries might be reserved for medical records. Perhaps the publishers could extend the section for "Personal Notes" to include various medical data. Doctors could assist patients in making entries for immunizations, idiosyncrasies, illnesses, operations, etc.

(3) Mr. M. Ellis (November 18, p. 1360) uses small single disks for tetanus toxoid injections, and states that the metal disks described by Parish[1] are too expensive for routine use. Each set of three disks on a swivel costs (depending on quantity) from 2s. 6d. to 3s. 6d. supplied by A. Walker & Son, Jewellers, Bromley, Kent. We have been fortunate in discovering a suitable electro-etch machine, costing £7 10s. and obtainable from Robert Pringle and Sons (London) Ltd., 36 to 42 Clerkenwell Road, London E.C.1. Our secretaries do the engraving free-hand, speedily, and neatly. The disks provide four *internal* surfaces for records, and this, we think, is important because we find that the two outer surfaces show tarnishing of the metal; the figures tend to become "rubbed" and would eventually be illegible. We have reason to believe that the engraved data on the protected internal surfaces will remain legible for many years. The disks can be worn "proudly" as a

pendant or bracelet by children, and are an incentive to complete an immunization schedule. On the other hand, adults generally prefer carriage on a key-ring or loose in the pocket with money, the set being approximately of the same size and weight as a two-shilling piece.

(4) In the U.S.A. records are sometimes carried on thin paper inside lockets or bracelets (Identi-med Co. Inc., Rochester, Minn.).

(5) Tattooing is advocated by Professor William Gissane (October 14, p. 1020), Dr. G. S. Wilson (October 28, p. 1149), and Mr. David Caro (November 18, p. 1360). The method falls down in respect of reinforcing doses of tetanus toxoid, the dates of which must be known as a guide to the need for further toxoid, or possibly antitoxin some years later. Moreover, the value of a readily accessible record, especially in an unconscious patient, is not confined to information concerning tetanus. A national or international system of tattoo-marks could doubtless be devised and a site for tattooing agreed. This is unquestionably the ideal method for some people, but psychological objections or associations would have to be overcome before it would be accepted by the general public. Further, tattooing could be a means of transfer of serum hepatitis.

(6) An alphabetic inoculation card-index in a central registry has already been started by some local authorities in this country (Mr. J. P. Turney, November 4, p. 1218), and may be consulted by telephone. In your annotation (September 9, p. 696) you also mention the Medic-Alert Foundation which operates in some parts of North America. For a membership fee of five dollars, a locket or a bracelet is issued bearing a telephone number, enabling doctors and hospitals to obtain information about immunization, etc. Central registry schemes, with variations to meet local requirements, are highly commendable, but have obvious limitations for a scattered population.

Finally, patients must be told that it is to their advantage to carry on the person, and to be able to produce, essential records. This is generally agreed, but the time is ripe for it to be universally implemented. Adults can be given some latitude in choosing a method, but children present a special problem: disks are acceptable, cheap, and accessible, and are also useful for propaganda to encourage immunization.—We are, etc.,

JOHN FRY.
H. J. PARISH.
D. A. CANNON.

Beckenham, Kent.

REFERENCE

[1] Parish, H. J., *Brit. med. J.*, 1959, 1, 640.

G.P. Maternity Beds

SIR,—I am one of the fortunate G.P.s in the Surbiton area who have access to maternity beds in Kingston Hospital (November 18, p. 1349). I would like to say that co-operation from all staff, medical and nursing, is excellent, and my patients are very pleased with the system. Cases booked into G.P. beds are either primigravidae, or multigravidae with an obstetric history. All "normal" cases are booked at home. In my practice the ratio is three domiciliary confinements to one hospital confinement. One's only complaint is that more G.P. beds are not available. This cannot be expected until hospital beds are increased, or the lying-in period is shortened.—I am, etc.,

Surbiton, Surrey. D. G. MAY.

SIR,—The condescension of the consultant obstetricians of this country must be recognized and inhibited. With Dr. A. Semmence (December 2, p. 1494) I feel that the treating of family doctors like stupid students must be resisted.

As fully responsible practitioners we can look after our own patients to the limit of our personal competence and ask for consultant advice and help as and when it is needed. That practitioners should not be considered fit to conduct initial and 36-week checks, to decide where confinements should take place, and whether specialist help may be needed is an insult which we cannot ignore.

Sheffield must be one of the worst offenders. Despite the existence of a normal delivery unit ideal for practitioner care where there is no continuity of care at present, no G.P. beds exist in this large city. Apart from home and nursing-home delivery the most we are offered is the opportunity to "antenatal" a small proportion of our booked cases. Care is taken, however, to see that we are not burdened with clinical responsibility or need for judgment, the initial check and 36-week check being conducted by hospital staff. We are allowed to test urine, etc., during the rest of pregnancy.

The desired ideal aimed at should be confinement in an institution or at home under the continuous supervision of the patients' own family doctor who has looked after them throughout pregnancy and is familiar to them. The family doctor can ask for specialist help as and when it is needed. The practitioner should continue to play a rightful and paid part in the conduct of the abnormal case. By all means insist on high standards of training, but give us the opportunity to practise and develop our skill in that cornerstone of general practice, midwifery.—I am, etc.,

Sheffield D. G. BARROWCLIFFE.

Paralytic Ileus after Amitryptyline ("Tryptizol")

SIR,—A woman of 60 was admitted to hospital on August 11, 1961, with a history of severe depressive symptoms for several weeks, of having idiopathic epilepsy in earlier life, and of medical treatment for thyrotoxicosis four years previously.

She was successively treated with "nardil" (phenylethylhydrazine), "niamid" (nialamide), "monase" (etryptamine acetate), "librium" (chlordiazepoxide), and electroconvulsive therapy without benefit. On October 18 she was given "tryptizol" (amitryptyline) 25 mg. t.d.s. and phenobarbitone gr. 0.5 (32 mg.) b.d. On November 2 "largactil" (chlorpromazine) 50 mg. t.d.s. was added and on November 6 soluble barbitone gr. 5 (320 mg.) at night. She showed very slight improvement. On November 9 tryptizol was increased to 50 mg. t.d.s. On November 9 and 10 she was given two tablets of cascara as she was constipated. On November 11 following five doses of this increased quantity of tryptizol she again complained of constipation to the ward sister, but when seen by one of us three hours later she was in a state of circulatory collapse of rapid onset and her abdomen was grossly distended. In spite of efforts at resuscitation, which included intravenous saline drip with the later addition of noradrenaline and also carbachol, the patient rapidly deteriorated and died. Post-mortem examination did not reveal any intra-abdominal lesion to account for this fatal paralytic ileus.

Tryptizol has anti-cholinergic properties and constipation is a known side-effect, but whether tryptizol played any part in this patient's rapidly developing and

lethal paralytic ileus is uncertain. In view of a possible association we feel that this case should be reported.—We are, etc.,

Winterton Hospital, Stockton-on-Tees, Co. Durham. E. A. BURKITT. C. K. SUTCLIFFE.

Cross-infection from Hospital Baths

SIR,—Mr. A. Ian L. Maitland (September 9, p. 708) has some very pertinent comments to make upon the place of the ward bath in cross-infection. In our experience the routine swabbing of ward baths very frequently demonstrates the presence of pathogens. All too often baths are inadequately cleaned, and even when the bath itself is dealt with the plug and chain are forgotten. Ward wash-basins too require better attention and we have frequently demonstrated the presence of *Candida albicans* from swabs of wash-basins in maternity units.

While one wholeheartedly agrees with the greater use to be made of shower units in wards (Army experience showed how economic they can be in the use of water), baths will remain with us for some time to come, both on account of the economic factor in their replacement and prejudice against them on the part of the patients. A little thought will show how unhygienic can be the stewing of the whole body in a bath, especially when this has been used by others. (We might begin the programme by ceasing to install them in nurses' homes.)

This means we must review cleaning techniques. The method advised by Boycott,[1] we feel, is too time- and material-consuming. Wiping the bath down with a detergent-disinfectant formulation (of which there are several types on the market) and placing the plug and chain to soak in a container of the same solution can very rapidly rid the above of pathogens, while at the same time making it aesthetically clean.—I am, etc.,

National Health Institute, Wellington New Zealand. H. T. KNIGHTS.

REFERENCE

[1] Boycott, J. A., *Lancet*, 1956, **2**, 678.

Aversion Treatment for Alcoholism

SIR,—Dr. H. Jacobs's letter (November 25, p. 1436) on the use of "antabuse" (disulfiram) in the treatment of alcoholics could, I think, be very misleading, because, used in the correct way, it can be of the greatest value over a long period. In my experience it is irreplaceable in assuring that the patient does not return to alcohol after a careful in-patient withdrawal and rehabilitation phase. In saying this I am not minimizing the importance of concomitant psychological treatment.

What I think is important is the way it is used. This, in my opinion, entails at least weekly visits to the patient's general practitioner for a minimum of six months, sometimes much longer. During such visits the doctor gives the patient 2 grammes of disulfiram and sees it chewed up and washed down. This is in addition to the daily intake of disulfiram. The other technique is to have someone in the home responsible for administering the drug to the patient each morning.

I have yet to come across a patient who is willing, after a few attempts, to drink on top of disulfiram. All patients are warned of the possible fatal consequences of drinking. That it is a risk which must be taken is inevitable in view of the far greater danger of the continuation of alcohol intake. I personally have no doubt from my own experience with my patients that disulfiram has a very valuable deconditioning and prophylactic application. I regard disulfiram as an insurance policy of considerable value with a very small premium.—I am, etc.,

London W.1. S. MORGAN WHITTERIDGE.

SIR,—Dr. H. Jacobs asks (November 25, p. 1436) whether "the time has now come when the use of disulfiram ('antabuse') as a treatment for alcoholism should be abandoned?" If by this he really means that the use of all so-called "protective" preparations should be abandoned then I must strongly disagree with him, for in my experience they are certainly useful in out-patient work for tiding patients over crises and as a short-term insurance against impulsive acts. Dr. Jacobs asserts that "psychological treatment not involving drugs still seems to be the keystone of therapy." But often the short-term use of protective drugs is the only effective means of keeping a hold on the patient in the early stages of psychotherapy. I do not think, for instance, that without such help many of the men discharged from the alcoholic unit at Pentonville would have persisted in treatment, or for that matter even have succeeded in arriving at the alcoholic rehabilitation hostel without mishap on release from prison.

If on the other hand Dr. Jacobs were merely to suggest that disulfiram itself be discontinued then I would agree with him, for some disulfiram–alcohol reactions are certainly alarming. With citrated calcium carbimide ("temposil"), which has hitherto mainly been used in the U.S.A. but is shortly to be generally available in this country, the subsequent reaction if the patient drinks is considerably less disturbing,[1] yet causing enough discomfort to discourage patients from trying to drink more alcohol.—I am, etc.,

London W.1. BASIL MERRIMAN.

REFERENCE

[1] Marconi, J., Solari, G., and Gaete, S., *Quart. J. Stud. Alcohol*, 1961, **22**, 46.

Firework Accidents

SIR,—In all the recent correspondence on firework injuries there has been just a trace of hysteria, and I feel that we must view this problem in its proper perspective. It must be admitted that fireworks as such give an enormous amount of pleasure to vast millions of people every year, and it is essential to relate the number of accidents to the number of users. This percentage would be infinitesimal. Without making such a comparison, it would be just as absurd as to publish a list of the annual deaths in the air without relating them to the number of miles and flying hours.

No, Sir, the prevention of people's pleasures is not the way to solve the problems associated with them. They can only be dealt with in this case by much more severe punishment of those who illegally sell fireworks to children, by heavier punishments to those who misuse them deliberately, and education as to the proper way to use them, and in this latter respect the manufacturers themselves could doubtless help through the medium of commercial television.—I am, etc.,

Princess Margaret Hospital, Swindon, Wilts. K. D. CROW.

Radiotriolein Test in Steatorrhoea

SIR,—Dr. A. G. Cox (October 7, p. 933) reports unreliable results using the radio-iodinated triolein test in the assessment of steatorrhoea. As his findings are contrary to those in our own series, which now numbers 630, we thought it might be worth stressing that it is the validity of the test as performed by Dr. Cox and not the validity of the test in general which is doubtful.

In view of the difficulties he reports, we thought it worth while to look critically at his methods. Our own have been described elsewhere.[1] It appears to us that much too small an amount of dietary fat is given at the same time as the labelled fat. Playoust *et al.*[2] have shown that unreliable results are obtained in the radio-iodinated triolein test if the simultaneous dietary load is less than 20 g. fat. Dr. Cox uses 250 ml. of milk which corresponds to 9 g. of fat. We always use a 50-g. fat load.

Under these circumstances we find that a sharp diagnostic limit can be drawn at the level of 3% faecal excretion. Under these conditions, the false positives in our experience have been negligible (~1%) and were attributable to urinary contamination in the stools. False negatives have occurred with the same frequency and were attributable to failure to achieve complete stool collection. We would like to stress that the test, if carried out properly and under reliable physiological conditions, is extremely reliable.—We are, etc.,

St. Vincent's Hospital, Sydney, Australia.
E. P. GEORGE.
W. B. HENNESSY.

REFERENCES

[1] Kinsella, V. J., Hennessy, W. B., and George, E. P., *Med. J. Aust.*, 1961, **2**, 257.
[2] Playoust, M. R., Wyatt, J. V., and Blackburn, C. R. B., *Aust. Ann. Med.*, 1959, **8**, 245.

Frontal Sinusitis

SIR,—I was interested to note in your leading article entitled "Management of Frontal Sinusitis" (October 28, p. 1135) that you mention various intracranial complications of this process as well as making some remarks about diagnosis and treatment of complications. May I add a few words in regard to one particular intracranial complication?

The physician treating frontal sinusitis would do well to be aware of the possibility of cavernous sinus thrombosis. As you know, this complication is more easily prevented than treated, cures being quite rare. At the first sign of sepsis and/or intracranial disease a blood culture should be taken and aggressive antibiotic therapy started. This will allow both immediate therapy (or prophylaxis) and a more discreet selection of antibiotics if the disease progresses. Also, the recognition of the presence of the neurological signs of cavernous sinus phlebitis, which usually occur shortly before the signs of orbital venous stasis, will make possible the early use of anticoagulants which with aggressive use of antibiotics may be life-saving. The short course of cavernous sinus thrombosis and its grave prognosis[1] leave little time for indecision or prolonged laboratory studies. A patient with a diagnosis of "possible early cavernous sinus thrombosis" should be looked upon as a grave emergency rather than a diagnostic problem.—I am, etc.,

White River Junction, Vermont, U.S.A.
C. T. YARINGTON.

REFERENCE

[1] Yarington, C. T., jun., *Ann. Otol. (St. Louis)*, 1961, **70**, 263.

Fascioliasis

SIR,—In a recent annotation (November 18, p. 1344) you suggest that medical men should be on the lookout for the liver fluke *Fasciola hepatica*. This suggestion is based on the six cases of Drs. R. V. Facey and P. D. Marsden (August 27, 1960, p. 619) and the one case of Mr. R. M. Kirk (November 18, p. 1333).

Therefore, to add significance to your annotation I should like to draw attention to the reports of Coudert and Triozon[1] and Mandoul *et al.*[2] These French workers, using the intradermal test, found 500 cases of human infection with *Fasciola* in 1956–7 and 200 cases in 1957–8. Perhaps I might also mention that your lengthy host-species list could have been further extended by the inclusion of rats and mice.—I am, etc.,

Zoology Department, King's College, London W.C.2.
J. P. G. WILLIAMS.

REFERENCES

[1] Coudert, J., and Triozon, F., *Presse méd.*, 1957, **65**, 1586.
[2] Mandoul, R., Sigalas, R., and Mourgues, R., *J. méd. Bordeaux*, 1958, **135**, 665.

Congenital Dislocation of the Hip

SIR,—I was interested in Professor A. R. Hodgson's letter (September 2, p. 647) confirming my old observation that congenital dislocation of the hip is extremely rare amongst Chinese. In 1933, in a lecture to a Shanghai medical society, and in 1935[1] I pointed out that during my eight years' surgical and orthopaedic practice in Shanghai I had seen only one case of this deformity, while Dr. W. S. New, chief of an orthopaedic hospital in Shanghai, had seen two cases in 20 years. However, I disagree with Professor Hodgson's view, implied in his letter, that the rarity of this deformity can be ascribed to the Chinese women's habit of carrying their children on their backs, with the child's legs abducted.

The reasons for my disagreement are: Firstly, congenital dislocation of the hip is not the only rare deformity amongst the Chinese; congenital clubfoot, so common in Europe, is just as rare, as recorded by me in the same paper,[1] and this could not possibly be explained by the Cantonese way of carrying their babies. Secondly, congenital dislocation of the hip is just as rare in the north of China as it is in the south, in spite of the fact that women in the north do not carry their babies on their back but in their arms. Thirdly, the Japanese women carry their children on their backs in a way similar to that of the Cantonese; nevertheless congenital dislocation of the hip is a very common deformity according to information given to me by Professor Tagaki, director of the orthopaedic university clinic in Tokyo. The university clinic of Kyoto also reported on several hundred such cases during a visit I made there years ago.

I believe that Professor Hodgson's figures reflect a sampling error. His cases certainly include many of the socially higher class Chinese who do not carry their children on their backs and whose probably Western-style doctors are more likely to refer their cases to a Western specialist; the deformities of these children will thus be readily discovered. On the other hand, the more numerous poor Chinese, who carry their children on their backs, frequent preferably native "doctors," who will either not detect the luxation or, if they do, will

not refer their cases to a Western specialist. Thus a high proportion of the dislocations of this group will escape attention. Professor Hodgson failed to mention the numerical distribution of these two social groups in his material and his figures are therefore of no statistical value.

Professor Hodgson's letter implies a support for the environmental interpretation of the aetiology of congenital dislocation of the hip, and thus runs counter to the general consensus of opinion, which is that the malformation, or at least the disposition to it, is of genetic origin. It is for this reason that I consider it important to clarify the interpretation of his observation.—I am, etc.,

Hong Kong. D. ENGEL.

REFERENCE

[1] Engel, D., *Z. orthop. Chir.*, 1935, **63**, 73.

West Kent Medico-Chirurgical Society

SIR,—May I ask you to extend the courtesy of your correspondence columns to an inquiry I am making on behalf of the West Kent Medico-Chirurgical Society? This society, now 106 years old, is one of the older established London societies, and I am collecting material and information regarding the activities of the society since its inception. I would be most grateful if any of your readers having information about the society, including copies of the transactions or programmes, or indeed copies of Purvis Orations, would be good enough to allow me a sight of these documents. If the owner has no further use for them, the society would be most grateful to accept relevant papers, photographs, or other associated material.—I am, etc.,

80 Torridon Road, Catford, London, S.E.6. R. LL. MEYRICK.

"Hospital Careers for Girls"

SIR,—Sir Zachary Cope, who reviews *Hospital Careers for Girls* (December 2, p. 1481), is perfectly correct in thinking that the figure 12,000 is a considerable overestimate of the number of trained almoners working in this country. The figure should, in fact, be 1,200. The attention of the publishers has been drawn to this printer's error and it is hoped that it will be corrected in subsequent editions of the book.—I am, etc.,

M. STEEL,
Secretary,
London W.C.1. The Institute of Almoners.

"Single White Male"

SIR,—May I protest against the adoption by Dr. R. Bodley Scott and his colleagues (November 25, p. 1385) of an unattractive American custom? I refer to the description of patients as "single white male." The information is uninformative and sounds offensive: if any useful fact is to be given surely an accurate statement of the patient's ethnic group would be more in keeping with the standard of our *Journal*. Human beings cannot be divided into "black" and "white."—I am, etc.,

Nottingham. J. M. MACFIE.

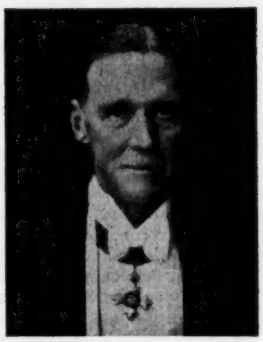
Obituary

H. W. DYKE, C.B.E., M.B., Ch.B.

Dr. Hamilton W. Dyke, formerly Director of Medical Services in Basutoland, died at East London, South Africa, on September 10. He was 80 years of age.

Hamilton William Dyke was born at Morija, Basutoland, the eldest son of Mr. Henry Dyke, principal of the Morija Training College. He graduated M.B., Ch.B. at Glasgow University in 1905 and returned to practise in Basutoland. In 1910, when again in Scotland for postgraduate study, he met and married Elizabeth Russell Gray, and he then joined the Basutoland Medical Service, to begin a career of outstanding service.

At the outbreak of the first world war he joined the R.A.M.C. and served overseas with the 11th Hussars and later with the Basutoland Contingent. After the war he was appointed surgeon-specialist to the Palestine Government and was stationed at Jerusalem from 1927 to 1929. Thereafter he served as principal medical officer, Bechuanaland, for five years until his appointment as Director of Medical Services, Basutoland. His distinguished services were recognized by his appointment to C.B.E. in 1935, and his wife was appointed an Officer of the same Order for the great services she rendered during the second world war. An active supporter of the B.M.A., he was chairman of the Lichtenburg and Basutoland Divisions.



Dr. Dyke was an able and conscientious doctor and a sincere Christian. He was justly proud of his missionary background, for his family played a prominent part in Christian and social work in Basutoland for 120 years, and it was fitting that he should sleep in the family burial-place in the heart of Basutoland. There, surrounded by his family, his friends, and a great company of the Basuto people, whom he loved so well, he was laid to rest in the shade of the great oak trees of Morija.

J. K. M. writes: It was during the years of his retirement that I enjoyed Hamilton Dyke's friendship. During this period he continued his lifelong interest in the affairs of the British Medical Association and the South African Medical Association. He was honoured by the award of emeritus membership of the latter in 1955. Characteristically, on retirement to East London, he joined one of the smaller struggling Presbyterian churches, which he served as an elder for many years. It was always a pleasure to visit the home of Dr. Dyke and his charming and devoted wife: it was open house to his many friends, and his wise counsel was frequently sought and never denied. He loved to talk of the early days, and his good memory and lively sense of humour made him an excellent raconteur.

It is fitting to quote from the memorial address by the Very Reverend Dr. R. H. W. Shepherd of Alice:

"It was characteristic of them both that when they came to East London for retirement they should have interested themselves in what he called 'helping lame dogs over stiles.' Their car was at the disposal of the sick, the lame, the blind, and others, many of whom he met and conveyed wherever they wished to go. As for himself and his long distinguished life, it remains for us to thank God that his spirit touched and influenced ours, that we had his companionship for so much of our journey, and that we can leave him in God's good keeping."

To his widow and two sons we extend our deep sympathy.

R. ASHLEIGH GLEGG, M.B.E., M.D., D.P.H.

Dr. Ashleigh Glegg, formerly county medical officer of health for East Sussex, died suddenly at his home in Seaford on November 17 at the age of 82.

Robert Ashleigh Glegg was born in Edinburgh on July 5, 1879, and educated at George Watson's College. He had a distinguished career at the University, where he graduated M.B., Ch.B. in 1901, obtaining honours in all subjects of the medical course and being awarded first prize for the practice of medicine. He obtained his first public health appointment in Edinburgh in 1903 (the year in which he took the D.P.H.), and in 1908 he became the first county medical officer of health for the Lindsey Division of Lincolnshire, remaining there until 1928, when he was appointed county medical officer of health for East Sussex. He held this post until his retirement in 1945. Only five years before this he had proceeded M.D. at the University of Edinburgh. He was an active supporter of the Society of Medical Officers of Health, and in 1931 he was vice-president of the Section of Public Health at the Annual Meeting of the B.M.A.

In his official position it had been brought home to him that there were many elderly people with insufficient means who were in great need of proper housing accommodation and nursing care. After he retired he set out to try and remedy this, and was the moving spirit in founding the East Sussex County Housing Association for the Aged. Aided by his wife, he threw himself heart and soul into this work, acting as honorary secretary to the association until the day of his death, and in the course of fifteen years had built up in different parts of the county an organization which now provides 5 residential clubs, 24 cottage flatlets, and 27 one-room flatlets, and has over 200 elderly folk in its care. This is indeed a worthy memorial to a remarkable man, and his work was recognized by the award of the M.B.E. in 1955. He was also appointed an Officer of the Order of St. John of Jerusalem for his service during the first world war.

Dr. Glegg was a keen amateur actor and took part in many productions, both in Lincoln and Lewes. He was also an enthusiastic fisherman and a member of the Sussex Piscatorial Society. Those associated with him could never fail to be stimulated by his enthusiasm for whatever he was doing. His time and advice were readily available to all and sundry. His unfailing cheerfulness, particularly in latter years when he was often in pain, was an inspiration to all, and he will be greatly missed by a wide circle of friends as well as the many for whom he helped to make the twilight of life more pleasant.

Dr. Glegg was twice married, both marriages being supremely happy ones. To his widow and daughter we extend our deep sympathy.—F. B. H.

L. S. P. WAKELEY, M.R.C.S., L.R.C.P.

Dr. L. S. P. Wakeley, who practised at Welwyn, Hertfordshire, died at his home there on October 16.

M. G. M. writes: If it had to be then it were well that it should be in the week of Luke, the saintly physician, for Leslie Wakeley was kin of all those who have modelled their lives on that wonderful example. Nevertheless it was an untimely death, for Leslie Wakeley at 59 still had much to give his patients, his partners, and his colleagues in wisdom and experience.

Born at Rainham, in Kent, on May 14, 1902, of farming stock, Leslie Stuart Pembrey Wakeley was educated at Dulwich College, where his six brothers also went, and then at King's College Hospital, where his brother, now Sir Cecil Wakeley, was already on the surgical staff. After qualifying in 1926 and house jobs at Hampstead General Hospital, the Belgrave Hospital for Children, and St. Giles Hospital he went into partnership in Hertfordshire, opening a surgery in Welwyn Garden City. While his practice was growing he was very active in the social life of the young town and in amateur dramatics. He became appointed factory surgeon and did this work so conscientiously and enthusiastically that many employers sought his advice and guidance in providing medical and first-aid services for their employees. He achieved exceptional success in this new field, as it was then. The outbreak of war distressed him greatly, and while his health deteriorated he became even more kindly to, and tolerant of, all those who sought his help and guidance. Finally during the war years he had to have a major operation, and again on his return to practice he resumed his unfailing kindness to old patients, new patients, evacuees, and later new industrial employees from all over Britain, the Commonwealth, and abroad. He was an active Christian both in his daily life and in his attendance at chapel.

His widow, his three sons, and his two daughters have suffered a grievous and untimely loss.

T. A. GREGG, L.R.C.P.&S.Ed.

Dr. T. A. Gregg, who died at Newbridge, Monmouthshire, on November 25 at the age of 81, had been in practice there for over 50 years, retiring only two years ago.

J. T. R. E. writes: This cheerful Irishman was an institution in the district, and he knew the family histories of three generations of patients. After qualifying in Glasgow in 1906 he came to Newbridge and at first visited his patients on horseback or in a pony and trap, and his patients who were criticallly ill were taken to Newport by a horse-drawn ambulance, a distance of 12 or more miles. He was later to have the first motor-car in the Western Valley. His work was extensive and varied and included attending mining accidents underground as surgeon to the Celynen Colliery ambulance division. During the "depression" his income from the mining community was nil, yet he carried on with his practice. He performed many operations in the homes of his patients, and was responsible for the delivery of over 2,000 babies.

His service to the community included the chairmanship of the local council and membership of the county council. He was one of the founders of the Newbridge Social Club and chairman of the Western Valley Medical Society. He will be badly missed in the district. The practice is being carried on by his son, Dr. John Gregg, with his cousin, Dr. Gregg Buick. Another son, Dr. Thomas Gregg, O.B.E., is the senior medical officer in the regional medical service of the Welsh Board of Health.

Dr. Gregg is survived by his three sons, to whom the sympathy of his friends and colleagues is extended.

MARGARET H. KNIGHT, M.R.C.S., L.R.C.P.

Dr. Margaret H. Knight (née Kingsford), who died on October 18 in New Zealand, was an exceptionally gifted woman. For many years she had a large consulting and obstetric practice in Auckland.

Born in England, Margaret Hypatia Kingsford was only a fortnight old when she was taken to Peru, where her father was engineer in chief to the Central and South American Telegraph Company. Her education began in Lima and was continued in Switzerland, Germany, and Italy. Consequently she became an accomplished linguist. She studied medicine at the London School of Medicine for Women (Royal Free Hospital), qualifying in 1920. After resident appointments she married, in 1922, Dr. Allan Knight, who qualified from the Middlesex Hospital, and went out with him to New Zealand, where she practised for the rest of her life.

Her success as a doctor was outstanding, and she was noted for her generosity, kindness, and courage. But she also made her mark in the social and public life of Auckland. An expert bridge player and a keen follower of

racing, she was an amateur actress of distinction. She was also prominent in the Girl Guide movement and in the University Women's Federation. Some years ago she was an active member of the committee set up to raise funds to establish a chair of obstetrics at Otago, and she was in great demand as a speaker at public meetings called to support this project.

Despite poor health she courageously continued in practice to the end and died in harness, as she would have wished. To her husband, Dr. Allan Knight, we extend our sincere sympathy.

VIMAL B. ARYA, M.D.

Mrs. Vimal Arya, consulting pathologist to the Social Service League Group Hospital, Nairobi, died suddenly on November 20 at the age of 39.

Vimal Brahm Arya was born in India at Venguria. Educated in Bombay, she graduated M.B., B.S. from Seth Medical College in 1947, taking the Shriwalkar medal in surgery during her clinical work and also obtaining a prize in midwifery. After qualification she took an interest in pathology and completed her postgraduate training at King Edward VII Memorial Hospital, Bombay. In 1950 she married Dr. B. P. Arya, who had settled in East Africa, where she joined him. Her interest in pathology was so great that in spite of having a settled family life and a son she found that she missed her professional work. So she returned to India in order to proceed to the degree of M.D. in pathology in 1952. She then started a laboratory in Nairobi, and this proved a great boon to her colleagues and the public at large. Conscientious and hard-working, she carried on her work and found time to help the British Red Cross Society. She also played an important part in the organization of the Asian blood bank for a number of years. The local medical organization also received her support and she gained the respect of her colleagues and the public. Modest in manner, she did not believe in outward pomp. Her untimely death at the age of 39 is a great blow. She is survived by her husband and son and daughter, to whom we extend our deep sympathy.—B. P. P.

A. N. GRIFFITH, M.B., B.Chir., F.R.C.S., D.L.O.

The obituary of Mr. A. N. Griffith was published in the *Journal* of November 11 (p. 1296).

Dr. LEONARD WOLF writes from New York: Adrian Griffith had been in Germany for six months when he had mastered sufficient of the language to deliver a lecture on audiometry to a learned German otological society. He had acquired a more than working knowledge of German folklore, history, and architecture, had fished most of the local rivers, ski'd on most of the local slopes, and had made many magnificent photographic reproductions of people and places. He taught many of us at the British Military Hospital, Rinteln, how to "derive benefit" (a favourite phrase of his) from every minute of every day and from every aspect of our surroundings.

He spent a week in New York in 1959 on his way to take up his scholarship in Chicago. His all-pervading interest and inquiring mind were at a peak then, and my last memory of him was when he insisted on spending the hour before his train left New York at the Mediaeval Cloisters of the Metropolitan Museum. He encompassed more in his three and thirty years than most of us do in our threescore and ten. "Together both, ere the high lawns appeared . . . we drove afield."

R. J. HAMER HODGES, L.M.S.S.A. F.F.A. R.C.S., D.A.

The obituary of Dr. R. J. Hamer Hodges was published in the *Journal* of November 25 (p. 1440).

Mr. AUSTIN CONCANON writes: May I be permitted to write a short note of appreciation of the late Dr. Hamer Hodges, who died so suddenly and tragically during the meeting of the South Western Obstetrical and Gynaecological Society at Portsmouth, where the previous afternoon he had opened the discussion with a most erudite and interesting paper on obstetrical anaesthesia? I was present at that meeting, and that was the first occasion on which I had seen and heard Dr. Hodges, although his name as an anaesthetist was well known to me.

I listened with great admiration to his paper and the statistics he produced on the reduction of maternal deaths from anaesthesia and likewise of the reduction of the perinatal mortality rate in Portsmouth as a result of the expert anaesthesia the mothers were receiving from his department. This service was not confined to the hospital obstetrical department but was also available to all G.P. obstetricians in the district, who could call on the consultants at any time for an anaesthetic for any of their patients in labour. I commend this as a model for all centres to follow. I think it can safely be said that Dr. Hamer Hodges has left an epitaph behind him in the admirable obstetrical anaesthetic service he established; and the mothers of Portsmouth, I am sure, are deeply grateful to him. I do hope that what he has built up and the high standard of work which he maintained will be continued in the same tradition. It can be truly said that he died an early death in the service of anaesthesia and the mothers of Portsmouth.

Medical Notes in Parliament

QUESTIONS IN THE COMMONS

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Industrial Health Service

The PRIME MINISTER refused a suggestion by Mr. PAVITT on December 5 that he should appoint a Secretary for Industrial Health and establish a new department to promote and administer a comprehensive occupational health service. Mr. Pavitt said that, in spite of the good work done by the Ministries of Health and Labour, there were still two or three people killed every working day, and about 56 times more absent through illness than through strikes. According to the Parkinsonian Law, if one divided things between two Ministries one got little advance. Perhaps the Prime Minister might consider combining the two Ministries in this way, as had been done for the Department of Technical Co-operation. Mr. H. MACMILLAN: "I am anxious to make all the progress we can. I do not wish to stand in the way for purely administrative reasons, and I will discuss this further with the Minister of Labour to see by what means he thinks further progress can be made."

Cosmetic Operations by Unregistered Persons

Mr. L. ABSE (Pontypool, Lab.) asked the Minister of Health on December 4 if he would introduce legislation to prevent unregistered medical practitioners carrying out cosmetic operations for such purposes as remodelling busts, straightening and shortening noses, removal of pouches under the eyes, and correcting obtruding ears, in view of the disfigurement and danger to health which might result. Mr. ENOCH POWELL replied "No." Mr. ABSE said there were in existence beauty bureaux advertising invitations to people to have these operations performed. They were run by quacks who had no medical qualifications, and there was ample evidence that they caused serious harm. Was it not very unsatisfactory, he asked, that whereas a person could not obtain spectacles except from a registered optician, and dental treatment except from a registered dentist, it was possible for anyone with impunity to wield a surgeon's scalpel with serious results? Mr. POWELL: "I have no evidence of harmful effects from the kind of treatment mentioned, but if you will let me have the evidence to which you have referred I will look into it."

Research on Mentally Subnormal Children

Mr. R. MATHEW (Honiton, Con.) asked the Minister how many controlled clinical experiments in the interests of medical research had been carried out on mentally subnormal children in the last 12 months; what experiments with the new measles vaccine, tested in this country on severely mentally subnormal children, had been carried out; and if any of the vaccinated subjects suffered ill effects other than the contraction of measles. Mr. POWELL answered that a measles vaccine had been given to a group of patients at the Fountain Hospital and Queen Mary's Hospital, Carshalton, before an anticipated outbreak of measles. There had been no ill effects apart from the reactions of modified measles.* Otherwise he was not aware of any controlled clinical experiments apart from those connected with research into subnormality.

Mr. MATHEW asked him to agree that if these experiments were to be carried out at all—and in a number of cases there had been undesirable side-effects such as high fever—they should preferably be carried out on volunteers rather than on mentally defective children. Mr. POWELL replied that the parents had been asked, and gave consent in writing. Subnormal children were particularly liable to measles, and therefore this test was particularly relevant to subnormal children.

Captain W. ELLIOT (Carshalton, Con.) said he had discussed this with the senior medical officer of the hospital, and had been assured that there were no bad side-effects and the only thing suffered was a slight rise in temperature and a very slight measles rash. Mr. POWELL: "That coincides with my information."

Cheaper Drugs for N.H.S. Prescriptions

Mr. J. THORPE (North Devon, Lib.) asked on what date it was expected it would be possible to procure the antibiotics tetracycline, chlortetracycline, oxytetracycline, and chloramphenicol for Health Service prescriptions at the same price as was being paid by the Ministry when purchasing them for the hospital service. Mr. POWELL said he would hope that the terms of supply to the general pharmaceutical services would be influenced by the price to the hospital service, but there were a number of differences which made direct comparison impossible. Mr. THORPE said that in the debate on the reports from the Public Accounts Committee (November 30) views were expressed from all quarters of the House that drugs purchased by the Health Service should be at the lowest obtainable price. The Minister's action on October 2 had been warmly welcomed, and had allowed hospitals to buy drugs sometimes at one-third of the price charged by American subsidiaries in this country. But this related to only 15% of the drugs used in this country. By allowing chemists to purchase at the same price the Minister would save £2m. to £3m. on the drug bill, and smash the monopoly racket. Mr. POWELL replied that the steps which the Government had taken were, he believed, wise and necessary. But drugs had always been supplied to the hospital service on more favourable terms than generally, for obvious reasons. That was why he could not give the comparison asked for.

Mr. K. ROBINSON (St. Pancras, North, Lab.) asked if it would not be possible for the Minister, if his hopes were not realized, to vary his contract with the chemists so as to require them to purchase these four drugs through him for the purpose of dispensing Health Service prescriptions? Mr. POWELL said he would have to consider whether he had statutory powers for that, but he would certainly watch continuously and closely the effect of the current procedure.

Cost of Checking Prescribing Costs

Mr. L. PAVITT (Willesden, West, Lab.) asked for the annual cost for each of the last three years of checking the prescription costs of general practitioners in the Health Service; and how many medical officers and administrators were employed. Mr. POWELL informed him that the cost was £45,000, £52,000, and £63,000, including rent and overheads, for a superintendent pharmacist and about 95 clerical staff employed by the Joint Pricing Committees and seven clerical staff employed by the department. No medical officers were engaged on this work, but regional medical staff visited doctors to discuss their prescribing costs.

*See *British Medical Journal*, November 11, p. 1250.

Anti-haemophilia Remedy

Mr. PHILIP GOODHART (Beckenham, Con.) asked what action had been taken to dissuade doctors from prescribing the anti-haemophilia egg-white derivative under the Health Service. Miss EDITH PITT, Parliamentary Secretary, Ministry of Health, stated that the Committee on the Classification of Proprietary Preparations had included it in the list of preparations considered to be not of proved therapeutic value. The attention of all doctors was drawn to this list.

Children in Mental Hospitals

Mr. N. DODDS (Erith and Crayford, Lab.) asked the Minister of Health, in view of the undesirability of accommodating children in wards for adults receiving treatment for mental illness and the concern that had been aroused when cases of this nature had been brought to light, if he would request hospitals to supply to his department details of all psychotic and maladjusted children under 13 years of age kept in wards with mentally sick adults, for the purpose of taking the necessary action to remedy wherever possible the present unsatisfactory situation. Mr. POWELL: "Yes."

Hospital Building

Mr. PAVITT asked the Minister how much would be spent in this year on the special 10-year new hospital building programme. Mr. POWELL said that the estimate was nearly £32m. for England and Wales, including equipment purchased centrally.

Local Assistance to Group Practice

The Minister replied "No" when Mr. J. SNOW (Lichfield and Tamworth, Lab.) asked him if he would give local health authorities powers to enable them to contribute towards the capital cost of doctors' group practices. Mr. Snow pointed out that it might be desirable to establish group practices to cover the widest areas, and that the capital required for property or buildings was far beyond the capabilities of an ordinary G.P. or group to provide. He asked the Minister to take another look at a case about which he (Mr. Snow) had been corresponding with the Staffordshire authority.

Mr. POWELL said there were powers available both for the Group Practice Loans Committee to make loans and for local authorities to build centres including practice premises. He knew about the particular problem to which Mr. Snow referred. He believed it could be solved without legislation, and a suggestion had been made to the local authority. Mr. K. ROBINSON asked if the Minister could confirm that the group practice loans scheme covered loans for property for these purposes. Mr. POWELL said "Yes."

Numbers of Immigrants

Viscount HINCHINGBROOKE (South Dorset, Con.) asked the Home Secretary for the figures of net immigration for each of the last five years from India, Pakistan, West Indies, West Africa, and East and Central Africa, respectively. Mr. R. A. BUTLER gave him the following information on December 1.

Estimated Net Inward Movement

	1957	1958	1959	1960	1961 (First 10 Months)
India	6,600	6,200	2,900	5,800	18,300
Pakistan ..	5,200	4,700	900	2,500	19,300
West Indies ..	23,000	15,000	16,400	49,700	57,700
West Africa ..	2,200	1,000	750	−550	5,100
East Africa ..	650	400	150	250	2,300

Notes: (1) A minus sign denotes a net outward movement. (2) Figures for the Federation of Rhodesia and Nyasaland are not available.

Removal of Strontium-90 from Milk

Mr. D. FREETH, Parliamentary Secretary for Science, told Commander J. S. KERANS (The Hartlepools, Con.) on December 5 that the removal of strontium-90 from milk had been investigated by the Atomic Energy Research Establishment at Harwell and the National Institute for Research in Dairying near Reading. Contact was also being maintained with developments in other countries, particularly the United States. Commander KERANS said that scientists in the U.S.A. had produced a method whereby over 90% of strontium-90 could be eradicated. If this country could adopt it as an economic process —which he was told it was—would not that go a long way to allay the anxiety of young mothers? Mr. FREETH said he understood that the eradication of strontium-90 from milk by the ion-exchange process had been demonstrated on a laboratory scale with extremely high initial levels of contamination. Further investigation would be needed to determine whether similar success would be obtained in practical large-scale processes with lower levels of contamination that might result from nuclear-weapon tests.

Experiments on Animals

Mrs. E. BRADDOCK (Liverpool, Exchange, Lab.) asked if the Parliamentary Secretary for Science would consider making a grant to assist the work of the Lawson Tait Memorial Fund, which had been established to find alternatives to the use of living animals in medical investigations. Mr. FREETH told her that the Medical Research Council would consider on its scientific merits any detailed research programme which might be submitted to them. Mrs. BRADDOCK asserted that there was so much resentment about the rise to 3,750,000 in experiments on living animals that any attempt to find alternatives ought to have the fullest financial support from the Government. She asked if the Parliamentary Secretary would be prepared to meet a deputation to discuss this. Mr. FREETH agreed to that, but pointed out that the Medical Research Council gave grants for specific research, not to bodies which themselves made grants to other people.

Diesel Fumes Prevention Bill

A Bill to enable new measures to be taken to abate the emission of diesel fumes from vehicles was introduced by Mr. R. SPEIR (Hexham, Con.) on December 6. It will not come up for second reading until next April.

Vital Statistics

Hospital In-patient Statistics

A thorough collection of statistics on the distribution of illness necessitating admission to hospital has been published jointly by the Ministry of Health and the General Register Office (*Report on Hospital In-patient Enquiry for the Year 1958*, Pt. 2, Detailed Tables and Commentary, H.M.S.O., 17s. 6d.). Nearly all Health Service hospitals in England and Wales, except mental hospitals, supplied data on one patient in ten admitted, after discharge or death of the patient. Comparisons between different hospitals or parts of the country with statistics of this kind are apt to be misleading, but in a special section on maternity the report includes some notable figures for the country as a whole. The average duration of stay in hospital after delivery fell steadily from 11.0 days in 1955 to 9.6 days in 1958, and this "enabled the increased number of admissions . . . to be accommodated in approximately the same number of beds." In this period the proportion of women discharged on or before the seventh day after delivery rose from 7.3% to 16.5%. The largest single cause of maternal death was toxaemia of pregnancy, and control of this disease by scrupulous antenatal care "offers the best opportunity to reduce not only maternal mortality but perinatal mortality and both maternal and infant morbidity." The proportion of cases of delivery in hospital associated with infection of the urinary tract and other puerperal sepsis varied widely in different parts of the country, being particularly high in London and the South-east, in the South-west, and in East Anglia. The report suggests that this problem needs attention. The first part of this report appeared in 1960 (*Brit. med. J.*, 1960, **1**, 1439).

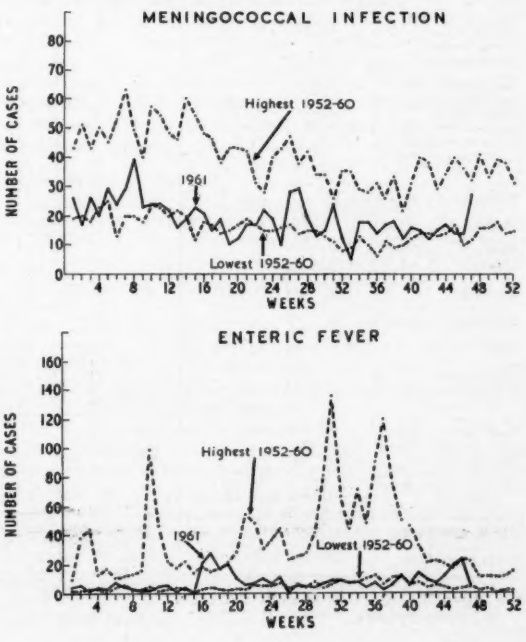
Radio-isotopes in Milk and Bone

In the week ended November 11 the average content of iodine-131 in milk was 117 $\mu\mu$c/litre (see *Journal*, December 2, p. 1506). In the subsequent three weeks, up to December 2, the average content fell from 93 $\mu\mu$c/litre in the week ended November 18 to 41 $\mu\mu$c/litre in the week ended December 2. The Agricultural Research Council states (Press Notice of December 7) that the present results give further support to the conclusion that weapon tests which had so far occurred would not cause the annual average level specified by the Medical Research Council (130 $\mu\mu$c/litre) to be reached in any part of the country.

According to the third of the Medical Research Council's Monitoring Report series (*Assay of Strontium-90 in Human Bone in the United Kingdom—Results for 1960, Part II*, 1961, H.M.S.O., London, price 1s. 3d. net) there was a decrease in the average level of strontium-90 in the bones of children aged 0 to 5 during the second half of 1960—from 3.15 strontium units (S.U.) in the first half of the year (see *Journal*, September 9, p. 695) to 2.65 S.U. in the second half. The period covered by this report preceded the recent resumption of nuclear weapon testing.

Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1952–60 are shown thus ------, the figures for 1961 thus ———. Except for the curves showing notifications in 1961, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.



INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **November 25** (No. 47) and corresponding week 1960.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the whole of England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES	1961					1960				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria ..	3	0	1	0		1	1	2	0	2
Dysentery ..	510	34	252		1	496	45	164	6	1
Encephalitis, acute	1	0		0		2	0		0	
Enteric fever:										
Typhoid ..	0	0	0	0		3	0	0	0	
Paratyphoid ..	4	1	0	1		7	0	0	0	
Food-poisoning ..	125	11	7	3		302	24	46	0	
Infective enteritis or diarrhoea under 2 years				11	27				16	29
Measles*	1,082	40	14	44	132	5,554	400	217	19	77
Meningococcal infection	27	0	4	0		12	0	7	2	2
Ophthalmia neonatorum	17	0	2	0		13	0	8	0	
Pneumonia† ..	222	20	147	5		281	24	180	2	1
Poliomyelitis, acute:										
Paralytic ..	29	2	0	} 0	2	{ 8	2	0	} 0	2
Non-paralytic ..	7	1	0			{ 1	0	0		
Puerperal fever§ ..	196	28	10	0		197	29	10	0	
Scarlet fever ..	493	32	44	11	14	568	33	71	30	13
Tuberculosis:										
Respiratory ..	376	43	67	17		375	49	59	18	
Non-respiratory	43	7	7	0		54	2	7	7	
Whooping-cough	193	12	27	18	13	1,105	69	115	9	74

DEATHS	1961					1960				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria ..	1	0	0	0	0	0	0	0	0	0
Dysentery ..	1	0		0		1	0		0	
Encephalitis, acute		1			0		1			1
Enteric fever ..	0	0	0	0		1	0	0	0	
Infective enteritis or diarrhoea under 2 years	5	0	0	1	1	11	0	0	0	0
Influenza	22	2	1	1	0	21	1	1	1	2
Measles		0	0	0	0		0	0	0	0
Meningococcal infection		0	0				0	1		
Pneumonia ..	666	46	37	18	4	575	42	31	21	11
Poliomyelitis, acute	22	0		0	0	0	0		0	0
Scarlet fever ..		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory ..	} 57	{ 6	} 9	{ 1	2	} 69	{ 0	8	0	3
Non-respiratory		{ 0		{ 0	0		{ 0	0	0	0
Whooping-cough	0	0	0	0	0	1	0	0	0	0
Deaths 0–1 year ..	318	37	28	7	20	330	26	29	9	11
Deaths (excluding stillbirths) ..	10,760	835	630	141	166	10,923	871	631	148	212
LIVE BIRTHS ..	14,752	1248	947	244	285	14,486	1258	1024	281	376
STILLBIRTHS ..	307	33	25			296	19	29		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

All Saints' Hospital, Southwark

All Saints' Hospital, Southwark, celebrated its fiftieth anniversary on December 7, when a plaque commemorating the Irish surgeon, Mr. E. Canny Ryall, who founded it solely for genito-urinary surgery was unveiled by the BISHOP OF SOUTHWARK. In 1911 urology was the Cinderella of the specialties, and there was only one hospital in the country devoted solely to it. Initially Mr. Ryall not only financed the hospital but also did most of the work. He once gave an unemployed and dirty patient sixpence to go away and have a bath before returning. This the man did and in due course was cured. Some weeks later the patient reappeared, bringing a bunch of violets and a shilling. He had that day drawn his first week's wages—the violets were for the surgeon who had cured him, the shilling was a donation to the hospital. This shilling, the hospital's first donation from a grateful patient, has been preserved as a memento in the front hall of the present building. In 1946 All Saints' Hospital was amalgamated with Westminster Hospital. In 1951 26 beds were set aside for gynaecological patients, and in 1961 "with some sadness" the urological patients were transferred, and made way for psychiatric in-patients. Mr. R. RYALL, the founder's son, is chairman of the hospital.

Chair of Chemical Pathology, Aberdeen University

Dr. S. C. FRAZER, senior lecturer in clinical chemistry, Edinburgh University, has been appointed to the newly created chair of chemical pathology at Aberdeen University.

Dr. Frazer, who is 39, was educated at Airdrie Academy and Glasgow University. He graduated M.B., Ch.B., from Glasgow in 1944, and took his B.Sc. (with first-class honours in biochemistry) in 1950, and his Ph.D. in 1955. From 1950 to 1955 he was assistant lecturer and lecturer in the biochemistry department at Glasgow University. He became lecturer in clinical chemistry at Edinburgh University in 1955, and senior lecturer there in 1959.

Proposed Rheumatism Research Institute

An international rheumatism research institute is to be established in London. The announcement of the scheme—made by Lord INMAN, chairman of the Charing Cross Hospital group—followed an offer to the hospital by Mr. and Mrs TERENCE KENNEDY of a donation to meet the cost of such an institute. A committee is to be formed to plan the project and appoint a director. Negotiations are proceeding over the site and it is hoped that the building will be completed within two years.

Leukaemia Research Unit at Great Ormond Street

A leukaemia research unit was officially opened at the Hospital for Sick Children, Great Ormond Street, on December 9. It was made possible by a grant of £3,000 from the Tees-side branch of the Leukaemia Research Fund. Dr. R. M. HARDISTY, consultant haematologist at the hospital, is in charge of the unit.

Training in Radiological Health and Safety

The Ministry of Health is asking local authorities—particularly in areas where there is an atomic installation—to encourage staff who are likely to encounter radiological protection problems in the course of their work to attend the background courses on radiological health and safety which are now being arranged at certain technical colleges. These courses are in line with the recommendations made in the 1960 Report of the Committee on Training in Radiological Health and Safety, set up by the Atomic Energy Authority under the chairmanship of Sir DOUGLAS VEALE.

Chiltern Medical Society

The Chiltern Medical Society, based on High Wycombe and Amersham, draws its membership (now 100) from a large area around these two towns. Its purpose is to arrange clinical meetings, medical symposia, and lectures from specially invited speakers. The President is Dr. G. S. W. Evans, the Vice-president Mr. J. P. Reidy, and the two honorary secretaries Dr. E. D. Kerr and Dr. J. Kidd. The annual subscription is 2 guineas, payable to the Honorary Treasurer, Dr. S. Widman, 26 High Street, Chesham, Bucks. A gynaecological and obstetric meeting has been arranged for the next meeting of the society on January 23, 1962. On April 4, 1962, Air Commodore W. K. Stewart will speak on "Some Aspects of Space Medicine" at a meeting to be held at the Princess Mary's Royal Air Force Hospital, Halton, Aylesbury.

Australian College of General Practitioners

In its annual report the Australian College of General Practitioners describes its new headquarters in Bligh House (43 Lower Fort Street, Dawes Point, Sydney). It is a historic colonial mansion, built about 130 years ago by the Campbells, a well-known mercantile family of the early nineteenth century. The house is to be restored with the help of an authority on colonial architecture. The College has appointed a committee to inquire into the criteria for admission to the College, and the feasibility of introducing an examination which would make membership and fellowship a registrable qualification.

College of General Practitioners' Medical Recording Service and Sound Library

A series of 30-minute talks on "First Aid for Doctors" has been made by speakers from the Birmingham Accident Hospital. The first three, by Mr. P. S. LONDON, are now ready: (1) "Principles of First Aid"; (2) "First Aid for Serious Injuries"; (3) "Teaching First Aid." Other new titles include "Osteoarthritis," by Dr. W. S. TEGNER, and "Tranquillizers and Antidepressants," by Dr. D. STAFFORD-CLARK. These talks are recorded on tape and disk, and may be borrowed by any doctor. Particulars and full library lists may be obtained from the College of General Practitioners, 41 Cadogan Gardens, Sloane Square, London S.W.3.

Institute of Cancer Research Annual Report

In the annual report of the Institute of Cancer Research, Royal Cancer Hospital, an "unusual and transient excess of income over expenditure" is revealed in the Institute's finances due to delay in completing new buildings and the consequent delay in recruiting staff. The Medical Research Council and the Treasury bore the burden of a substantial salary increase for the scientific staff; the British Empire Cancer Campaign further increased its block grant to the Institute; and the U.S. Public Health Service maintained its support of the chemotherapy programme, described as a "justification of international collaboration in science."

Eli Lilly Medical Research Fellowship (South Africa)

Medical practitioners registered in South Africa are invited to apply for the 1962 award of this Fellowship, which is for the purpose of medical research and is not intended for postgraduate study. Its net value is 300 dollars a month for 12 months, plus return travelling expenses to the point of study in the U.S.A. Details can be obtained from Dr. H. A. SHAPIRO, Honorary Chairman, Selection Committee, Eli Lilly Medical Research Fellowship (South Africa), P.O. Box 1010, Johannesburg, South Africa. The closing date for applications is February 28.

Leverhulme Research Awards

Application is invited for Fellowships and grants in aid of research. These awards are intended for senior workers of established position and are limited to British-born subjects normally resident in the United Kingdom. No subject of inquiry is excluded from consideration, but preference is given to subjects in which existing provision for research is inadequate. Details may be obtained from the Secretary, Leverhulme Research Awards, St. Bridget's House, Bridewell Place, London E.C.4. The closing date is December 31. Results will be announced in May and the awards will normally date from September 1, 1962.

Food Group, Society of Chemical Industry

While the primary interests of the Food Group of the Society of Chemical Industry are chemical considerable attention is given to the technological, economic, legal, and public health aspects of the subject, and the Nutrition Panel is very active in practical aspects of nutrition. It is not necessary to hold a scientific qualification to join the Society, and those who have a serious interest in the technical side of the food industry and nutrition may obtain further information from the Society's Secretary, 14 Belgrave Square, London S.W.1.

St. Dunstan's Annual Report

St. Dunstan's annual report notes that out of a total of 5,500 men and women who have been admitted to St. Dunstan's since 1915 2,600 are still living—1,250 of whom are casualties from the first world war and 1,350 from the second.

National Childbirth Trust

The Natural Childbirth Trust of Great Britain has changed its name to the National Childbirth Trust. The word "natural," the Trust states, suggested the rejection of analgesics and orthodox methods of helping women in labour when these were necessary.

British Dietetic Association

The British Dietetic Association is offering an award of £100 from the Rose Simmonds Memorial Fund to a dietitian or to someone wishing to train as a dietitian. Details may be obtained from the B.D.A., 251 Brompton Road, London S.W.3.

British Association of Otolaryngologists

The following have been elected officers of the B.A.O. for 1961–2: *President*, Professor V. F. LAMBERT; *immediate past president*, Mr. C. GILL-CAREY; *vice-president*, Mr. MYLES L. FORMBY; *honorary treasurer*, Mr. J. C. HOGG; *honorary secretary*, Mr. G. H. BATEMAN.

Grants, Gifts, and Bequests

▶ The Fleming Memorial Fund for Medical Research has made a grant of £15.000 to the Christian Medical College at Vellore, near Madras in Southern India, for a new physiology and pharmacology research block to be named "The Fleming Research Institute." Research will be carried out there into the causes of paralysis and deformity in leprosy under the direction of Professor P. W. BRAND.

▶ The Hugh Fraser Foundation has made a grant of £22,500 for rehousing the medical library of the Royal Faculty of Physicians and Surgeons of Glasgow.

People in the News

▶ Sir JOHN ECCLES, F.R.S., has been elected to an Honorary Fellowship of Exeter College, Oxford, and Mr. ISAAC WOLFSON to an Honorary Fellowship of St. Edmund Hall.

▶ Lord EVANS is to be given the freedom of his home town —Merthyr Tydfil—in recognition of his contributions to medicine.

▶ Dr. CELIA M. OAKLEY, of the Postgraduate Medical School, Hammersmith, has been awarded a Lederle International Fellowship for the coming year. She will study at the Cardio-pulmonary Laboratory at the Strong Memorial Hospital, Rochester, New York.

▶ Dr. L. S. ANDERSON, who qualified in medicine at Manchester University in 1937 and obtained the D.P.H.Ed. in 1946, has been appointed to the Regional Office for Africa of W.H.O. as a public health adviser.

▶ Dr. R. R. A. COOMBS, Ph.D., has been awarded the Karl Landsteiner Memorial Award for Scientific Research of the American Association of Blood Banks.

▶ Mr. R. BLYTH, M.P.S., has been appointed editor of *The Pharmaceutical Journal*. He has been responsible for the paper since June this year.

COMING EVENTS

Central Council for Health Education.—Annual Conference for Medical Officers of Health, "Mental Health and the Public," February 20–23, Cora Hotel, London. Details from Medical Director, C.C.H.E., Tavistock House North, Tavistock Square, London W.C.1.

Chester Beatty Research Institute. — Symposium, organized on behalf of Unesco, "Cellular Basis and Aetiology of Late Somatic Effects of Ionizing Radiations," March 27–30, 1962, Chester Beatty Research Institute, Fulham Road, London S.W.3. Details from Dr. P. ALEXANDER at the Institute.

Association of Anaesthetists of Great Britain and Ireland.—Scientific meeting open to junior anaesthetists up to and including those of senior registrar status, March 30, 1962, Manchester. Details from Honorary Secretary, Association of Anaesthetists, 47 Lincoln's Inn Fields, London W.C.2.

Central African Medical Association.—With support of Faculty of Radiologists (Eng.), conference in two sections, "Radiodiagnosis" and "Radiotherapy," Bulawayo, Southern Rhodesia, May 1–4, 1962. Details from Dr. P. E. S. PALMER, P.O. Box 958, Bulawayo, Southern Rhodesia.

1st International Congress of Psychosomatic Medicine and Childbirth.—Paris, July 8–12, 1962. Details from Dr. L. CHERTOK, General Secretary of Congress, S.O.C.F.I., 1 ter Rue Chanez, Paris 16, France.

NEW ISSUES OF SPECIALIST JOURNALS

The journals listed below are obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London W.C.1.

BRITISH JOURNAL OF PREVENTIVE AND SOCIAL MEDICINE

Coronary Heart Disease in London Busmen. A Progress Report with Particular Reference to Physique. J. A. Heady, J. N. Morris, A. Kagan, and P. A. B. Raffle.
Maternal Health in Early Pregnancy and Congenital Defect. A. D. McDonald.
Geographical Distribution of Primary Tumours of Bone in England and Wales. W. M. Court Brown, R. Doll, M. A. Heasman, and H. A. Sissons.
Social Class Migration and Chronic Bronchitis. A Study of Male Hospital Patients in the London Area. S. H. Meadows.
Prevalence of Neurosis in Women. W. Lawton Tonge, D. W. Cammock, J. S. Winchester, and B. N. M. Winchester.
An Analysis of Tetanus Prophylaxis in 3,455 Cases. P. M. Binns.
Effect on Local Death Rates of Recent Changes in the Statistical Treatment of Hospital Deaths. D. Hewitt.
Stillbirth in the City of Bombay. S. S. Jha.
Index.

Volume 15, No. 4. (Quarterly; £3 annually.)

BRITISH HEART JOURNAL

Primary Pulmonary Hypertension in Childhood. J. F. Farrar, R. D. K. Reye, and Douglas Stuckey.
Intracardiac Acetylcholine Infusion and Left Heart Dynamics in Rheumatic Heart Disease. P. Samet, W. H. Bernstein, and R. S. Litwak.
The Two-catheter Technique in Indicator-Dilution Cardiovascular Studies. E. G. Dimond, A. Benchimol, and E. W. Crow.
Electrocardiographic Changes Associated with Allergic Urticaria. A. S. Rogen and E. Richardson.
Time Relationships of the Left Atrial V Waves in Mitral Valvular Disease. P. G. F. Nixon.
Percutaneous Puncture of the Left Ventricle. E. C. Brockenbrough, A. G. Morrow, J. Talbert, and E. Braunwald.
A Lead System Recording Total Outward Cardiac Dipole Strength. M. R. Barber and E. J. Fischmann.
Vector Analysis of the rS Pattern in Lead V5. P. Schweitzer.
Electrocardiography as a Means of Presaging Cardiac Pain. William Evans.
The Third Heart Sound in Mitral Regurgitation. P. G. F. Nixon.
Myocardial Responses to Cheiation. Alfred Soffer, Taft Toribara, and Akgun Sayman.
A Simple Instrument for Recording Dye Dilution Curves from the Circulation. Anthony D. Jose and George Latham.
Triscuspid Atresia and its Prognosis with and without Surgical Treatment. Maurice Campbell.
J. S. Haldane Centenary, 1961. Maurice Campbell.
F. G. Hobson. Maurice Campbell.
Gustav Nyiln. K. Shirley Smith.
Case Reports:
Myxoma of the Left Atrium. R. N. Anderson, H. E. Aldridge, and W. F. Greenwood.
Stokes-Adams Attacks in Pregnancy. T. B. Begg and W. R. M. Thompson.
Cardio-aortic Fistula with Multiple Congenital Anomalies in a 71-year-old Man. T. D. O'Brien and I. J. L. Goldberg.
Index: Volume XXIII.

Volume 23, No. 6. (Bi-monthly; £4 4s. annually.)

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, December 18

●HUNTERIAN SOCIETY.—At Talbot Restaurant, 64 London Wall, E.C., 7 for 7.30 p.m., dinner-meeting. 8.30 p.m., discussion by Professor L. S. Penrose, F.R.S., and Dr. J. A. Fraser Roberts: Human Chromosomes and Heredity.

MANCHESTER MEDICAL SOCIETY: SECTION OF GENERAL PRACTICE.—At Large Anatomy Theatre, Manchester University Medical School, 8.30 for 9 p.m., Professor A. C. P. Campbell: Secreting Tumours.

Wednesday, December 20

HARVEIAN SOCIETY OF LONDON.—At 11 Chandos Street, W., 8.15 p.m., Dr. C. E. Ford: Normal Chromosomes and Chromosome Studies in Leukaemia. Professor L. S. Penrose, F.R.S., and Professor P. E. Polani will read papers on Chromosome Abnormalities.

Thursday, December 21

LEWISHAM GENERAL HOSPITAL.—5.45 p.m., clinicopathological conference.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At 11 Chandos Street, London W., 8.15 p.m., Dr. Hugh Gainsborough: Is Crohn's Disease an Entity?

APPOINTMENTS

BIRMINGHAM REGIONAL HOSPITAL BOARD.—R. F. Rohan, M.B., B.S., F.R.C.S., Part-time Consultant Ear, Nose, and Throat Surgeon to Birmingham (Dudley Road) Group of Hospitals; J. A. Macdougall, M.Chir., F.R.C.S., Part-time Consultant Surgeon to Wolverhampton Group of Hospitals; D. C. Cooke, F.R.C.S.Ed., Part-time Consultant Surgeon to Dudley and Stourbridge Group of Hospitals; Maureen E. Hardeman, M.B., Ch.B., F.F.A. R.C.S., D.A., D.Obst.R.C.O.G., Whole-time Consultant Anaesthetist to Birmingham (Selly Oak) Group of Hospitals; Unity R. Allen, B.M., B.Ch., M.R.C.P., D.C.H., Whole-time Consultant Pathologist to Burton-on-Trent and Lichfield, Sutton Coldfield, and Tamworth Groups of Hospitals.

LIVERPOOL REGIONAL HOSPITAL BOARD.—H. J. Goldsmith, M.D., M.R.C.P., Consultant Physician to Sefton General Hospital.

SLOCOMBE, G. F., M.B., B.S., D.P.H., Deputy Medical Officer of Health, City and County Borough of Canterbury and East Kent United M.O.H. District, from January 1, 1962.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD.—F. E. Bennetts, M.B., B.S., F.F.A. R.C.S., D.A., Senior Anaesthetic Registrar, Frenchay Hospital; S. H. Mehta, M.D., Medical Registrar, Southmead Hospital; T. N. Paul, M.B., B.S., Registrar in Diseases of the Chest, Ham Green Hospital and Bristol Chest Clinic; M. F. Dixon, M.B., B.S., M.R.C.P., D.P.M., Consultant Psychiatrist, Eunice V. Morgan (née Turner), M.B., B.Ch., D.C.H., Registrar in Psychiatry, and Mary Valvis, M.B., B.Ch., D.P.M., Senior Registrar in Psychiatry, all at Roundway Hospital, Devizes; M. L. Crosfill, M.B., B.S., F.R.C.S., and I. E. McInnes, M.B., B.S., F.R.C.S., Surgical Registrars, J. R. Kirkup, M.B., B.Chir., F.R.C.S., Senior Registrar in Orthopaedic and Traumatic Surgery, and P. J. van den Brul, M.B., B.S., D.A., Anaesthetic Registrar, all at Bath Group of Hospitals; F. Mulcahy, M.B., B.Ch., F.F.R., D.M.R.D., Consultant Radiologist with duties mainly at Gloucestershire Royal Hospital; H. M. Saxton, M.B., B.S., F.F.R., M.R.C.P., D.M.R.D., Consultant Radiologist with duties mainly at Cheltenham General Hospital; J. Crause, M.B., B.S., D.P.M., Senior Registrar in Psychiatry, Horton Road and Coney Hill Hospitals; G. T. Goodey, M.B., B.S., D.Obst.R.C.O.G., Registrar in Obstetrics and Gynaecology, Gloucestershire Royal Hospital; Sheila J. B. Robertson, M.B., Ch.B., D.A., Anaesthetic Registrar, Taunton and Somerset Hospital; D. W. Fortune, M.B., Ch.B., Senior Registrar in Pathology, Royal Devon and Exeter Hospital/Westminster Hospital, London (joint appointment); M. B. Heywood-Waddington, M.B., B.Chir., F.R.C.S., Registrar in Orthopaedic and Traumatic Surgery, Torbay Hospital, Torquay, and Princess Elizabeth Orthopaedic Hospital, Exeter; J. B. Phillips, M.B., B.S., Surgical Registrar, Torbay and Newton Abbot Hospitals; H. G. Wotherspoon, M.B., Ch.B., D.C.H., D.Obst.R.C.O.G., Registrar in Obstetrics and Gynaecology, Royal Devon and Exeter Hospital/Southmead Hospital (exchange appointment); P. Atkins, M.B., B.S., F.R.C.S., Surgical Registrar, South Devon and East Cornwall Hospital; J. Karpouzas, M.D., Paediatric Registrar, South Devon and East Cornwall Hospital and United Bristol Hospitals (joint appointment); N. F. Lilauwala, M.B., B.S., F.R.C.P.Ed., M.R.C.P., D.C.H., Registrar in Psychiatry, Moorhaven Hospital.

BIRTHS, MARRIAGES, AND DEATHS

DEATHS

Ainscow.—On November 28, 1961, at 420 Bearwood Road, Smethwick, James Arthur Ainscow, M.B., Ch.B.

Beattie.—On November 24, 1961, Davis Andrew Beattie, M.B., B.S., F.R.C.S., of Swift Current, Saskatchewan, Canada.

Brown.—On November 23, 1961, in hospital, Arthur Carnarvon Brown, M.R.C.S., L.R.C.P., of Egdean, Dartford Road, Sevenoaks, Kent, aged 85.

Farquharson.—On November 26, 1961, Edward Farquharson, M.D., of Glenesk, Dunbar Road, Bournemouth.

Fortune.—On November 28, 1961, at Kilchoar, Helensburgh, Dunbartonshire, Ernest George Fortune, M.B., C.M., F.R.C.S.Ed., aged 91.

Gray.—On November 29, 1961, at his home, 29 St. Davids Drive, Leigh-on-Sea, Essex, Donald MacLeod Gray, L.R.C.P.&S., aged 67.

Rogerson.—On October 21, 1961, Oswald Herbert Rogerson, L.S.A., L.M.S.S.A., of St. Gerrans, Hale Avenue, New Milton, Hants, aged 87.

Sherwood.—On November 24, 1961, at Stafford General Infirmary, Edith Grace Sherwood, M.R.C.S., L.R.C.P., aged 74.

Walker.—On November 27, 1961, at Queen Elizabeth Hospital, Birmingham, Cranston Walker, M.D., of 120 Pershore Road, Edgbaston, Birmingham.

Wallis.—On November 30, 1961, at his home, 2 Firs Avenue, East Sheen, London S.W., Percy Boyd Wallis, M.R.C.S., L.R.C.P., aged 76.

Walsh.—On November 18, 1961, in London, Rodney Stephen Walsh, B.M., B.Ch., D.A., F.F.A. R.C.S., aged 34.

Whitehead.—On November 18, 1961, Jerry Whitehead, M.B., Ch.B., of 6 Brentwood Avenue, Worsley, Manchester, aged 82.

Any Questions?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Palmaris Longus and Carpal-tunnel Syndrome

Q.—*As the median nerve approaches the wrist it winds round from behind the sublimis tendons to underneath the flexor carpi radialis and palmaris longus. It has been suggested that compression of the median nerve between the flexor tendons and palmaris longus plays a role in the dynamics of the carpal-tunnel syndrome. Palmaris longus is not constantly present, and may be found in one wrist and not in the other. Has any correlation been established between the presence of palmaris longus and carpal-tunnel symptoms?*

A.—Palmaris longus is a very variable muscle. As stated in the question it is often absent and its structure varies very considerably. A. A. van der Bracht[1] suggested that its attachment to the carpal ligament might predispose to compression of the carpal tunnel, especially if the wrist was often hyperextended. The tendon of palmaris longus usually passes in front of the transverse carpal ligament to be inserted into the anterior surface of the distal part of that ligament and into the central part of the palmar aponeurosis. It does not encroach on the limited space within the carpal tunnel, but the secondary role suggested is feasible. That palmaris longus is not essential for production of the syndrome is shown by its absence from one of the unspecified number of cases seen by the writer quoted.

Identification of palmaris longus is normally easy in thin subjects, but few knowing the anatomical variability of the muscle and its tendon would care to vouch for its absence in obese women, who are the most common sufferers from carpal-tunnel syndrome. I do not know of any systematic observations made by direct inspection at operation to correlate the presence of palmaris longus with the carpal-tunnel syndrome.

REFERENCE

[1] van der Bracht, A. A., *Brit. med. J.*, 1958, **1**, 1180.

Menthol Cigarettes

Q.—*Recently several tobacco companies have started to make menthol-impregnated cigarettes. Does the long-term inhalation of menthol have any deleterious effects, and is any benefit likely to be gained from these cigarettes by heavy smokers and chronic bronchitics?*

A.—The inhalation of menthol vapour causes a sensation of coolness in the respiratory tract, and it is for this reason that tobacco companies manufacture menthol-impregnated cigarettes. The sensation of coolness is due to a local effect of menthol upon the sensory nerve endings in the respiratory mucous membrane. The other effects of a menthol inhalation upon the respiratory tract are familiar to everyone who has personal experience of the use of this simple remedy in the treatment of an acute upper respiratory infection; it causes congestion and an increased secretory flow from the mucous membrane. I know of no data on the effects of long-term inhalation of menthol, but I think one can safely assume that continued stimulation of the respiratory mucous membrane in this way is more likely to be harmful than beneficial. The position with regard to mentholated cigarettes has been ably summarized by Drill.[1] "It remains to be proved that mentholated tobacco smoke is different from ordinary tobacco smoke in its effect on the respiratory tract except as related to the sense of coolness characteristic of locally applied menthol."

REFERENCE

[1] Drill, V. A., *Pharmacology in Medicine*, 1954. McGraw-Hill, New York.

Alopecia in Young Women

Q.—*Is there any evidence that alopecia is increasing in young women, and, if so, could it be attributed to dyeing, lacquering, or waving the hair?*

A.—The incidence of alopecia in young women does indeed seem to have increased in recent years. It is extremely difficult to know whether this is a genuine increase, but at least more cases have been seen by dermatologists in several countries, including the United Kingdom, France, and U.S.A. It takes the form of a diffuse falling of hair and the thinning becomes more noticeable on the top of the head. This is often accompanied by a change in the texture of the hair, which becomes finer and lifeless. In some cases the scalp becomes dry, but in others the reverse seems to occur and the hair becomes more greasy than before. The distribution of hair-loss is suggestive of an endocrine imbalance, particularly of the androgen/oestrogen ratio. It resembles the change which occurs in many women in the puerperium or after the menopause. In the great majority of cases, however, there are no other symptoms pointing to endocrine upset, and even the most thorough investigation fails to show this.

At the present time, therefore, the nature of this falling of hair is not understood. It has been suggested that it is due to shampooing or other treatments of the hair or scalp, but definite evidence of this is lacking. Dyeing and lacquering are not likely to cause loss of hair; bleaching and waving may make the hair more brittle and cause it to break off near the scalp. This is, however, not genuine alopecia, since the hair has not fallen from the follicle but has only broken off in some part of the hair shaft, leaving stumps.

Recording Foetal Heart

Q.—*Are there any instruments manufactured in this country for recording the foetal heart?*

A.—So far as I know foetal electrocardiographs are not made commercially, at all events in this country. I have been in touch with some of the firms, who suggest that an electroencephalograph might be relatively easily adapted to the purpose since it possesses approximately the required gain. Obviously a certain amount of adaptation would be required, but I am assured that it should not prove too difficult—that is, with the aid of a skilled electronics technician.

Granulomatous Hepatitis

Q.—*What is granulomatous hepatitis? What is its aetiology and pathology, and how may it be diagnosed? Is there any treatment?*

A.—The term "granulomatous hepatitis" is a morbid anatomical description and is not the name of a specific disease. It is a chronic inflammation of the liver which characteristically shows granulomata; these latter are focal proliferations of mononuclear cells such as macrophages (synonyms: epithelioid cells, giant cells), plasma and lymphocytoid cells, fibroblasts, and, sometimes, capillaries.

The classical example of this, of course, is the tubercles of tuberculosis. Other aetiological agents producing granulomata of the liver are syphilis, leprosy, brucellosis, histoplasmosis, parasites such as amoebae and schistosomata, and various fungi, particularly the actinomyces which produce a pyogenic granulomatous hepatitis. Granulomatous hepatitis is sometimes found in conditions of unknown aetiology which may show lesions in other parts of the body. Examples of this are sarcoidosis and cases of hypersensitivity—e.g., polyarteritis nodosa.

Unfortunately, when granulomata of unknown aetiology are found as an isolated feature in the liver the condition is diagnosed as a "granulomatous hepatitis." By persistent usage the name becomes established, albeit erroneously, as if it was a specific disease. Treatment depends on the identification of the aetiological agent.

Controlled Cross-circulation

Q.—*In 1955 Lillehei[1] reported 30 human operations, all involving open cardiotomy, utilizing the procedure of controlled cross-circulation. Earlier experimental work on dogs was described by Warden et al.[2] Have there been any advances since then in the use of this procedure, and is it used in this country?*

A.—The perfection of the extracorporeal heart-lung machine has now entirely superseded the use of controlled cross-circulation, both in the hands of its originator Lillehei and in all other centres. The technical and ethical problems involved in cross-circulation were found to be too great for its continued use as soon as an alternative became available. The method is not being used anywhere in the world at the present time.

REFERENCES

[1] Lillehei, C. W., *Postgrad. Med.*, 1955, **17**, 388.
[2] Warden, H. E., Cohen, M., Read, R. C., and Lillehei, C. W., *J. thorac. Surg.*, 1954, **28**, 331.

Callus on the Feet

Q.—*An active, elderly woman has a circular pad of callus about ¼ in. (3.2 mm.) thick and about 1 in. (2.5 cm.) in diameter on the ball of one foot. There is a similar, but thinner, formation on the ball of the other foot. Would formalin soaks be of any use?*

A.—Formalin is likely to be of value only if there is a plantar wart in the centre of this callus. Recognition of a small plantar wart surrounded by much callus may be very difficult. F. F. Hellier[1] has shown that in most or all of these cases there is no plantar wart and that the mass of callus presents essentially an orthopaedic problem. Formalin will not help, but paring down with a knife or razor blade may provide temporary relief.

REFERENCE

[1] Hellier, F. F., *Brit. med. J.*, 1960, **2**, 915.

Primary Vaccination in Middle Age

Q.—*In view of the fact that primary vaccination in an adult is liable to cause a severe reaction and is sometimes accompanied by serious complications, are there any special precautions that can be taken in performing a primary vaccination in a man aged 53?*

A.—Not much can be done to prevent the severe reaction to primary smallpox vaccine which is likely to occur in a man aged 53. The only procedure recommended is an injection of vaccinia-immune gamma globulin, which sometimes alleviates the more irksome symptoms of a severe reaction. Many authorities would not consider vaccination at this age to be desirable, although it might be necessary for overseas travel. The multiple-pressure method of vaccination tends to produce less severe reactions than the scratch technique.

Standards of Growth in Adolescence

Q.—*How can one decide whether an adolescent's shortness in stature represents merely a normal variation from the mean for his age, weight, and build, or a condition demanding further study? If the latter, what investigations are indicated?*

A.—Unfortunately, the British standards[1] for heights and weights are not easily applicable during adolescence. The assessment of normality of size in adolescence must be made in relation to whether or not the adolescent spurt in growth has occurred and not in relation to chronological age, which at adolescence means very little.[2] The best way to go about this problem would seem to be as follows: Take a radiograph of the left hand and wrist of the adolescent in question and determine his skeletal age[3]; then, from the Bayley and Pinneau tables,[4] see what adult height is predicted from the present height and skeletal age. The decision whether or not the predicted adult height is normal can then be made in the light of general experience.

If the predicted adult height is grossly below normal the only investigations that are likely to help would be measurements of the father and the mother to assess the factor of heredity and a general medical investigation to make sure that the child was not suffering from any chronic disorder. Investigations in such cases, however, usually yield negative results, and at present treatment is quite unsatisfactory. It may well be that such patients have suffered from a lack of growth hormone during the growing period, but we have at present no means of determining whether or not this is the case; and human growth hormone preparations are not as yet generally available.

REFERENCES

[1] *Growth and Development Charts*, 1959. Collard and Sons, London.
[2] Tanner, J. M., *Growth at Adolescence*, 1955. Blackwell Scientific Publications, Oxford.
[3] Greulich, W. W., and Pyle, S. I., *Radiographic Atlas of Skeletal Development of the Hand and Wrist*, 1950. Oxford University Press, London.
[4] Bayley, N., and Pinneau, S. R., *J. Pediat.*, 1952, **40**, 423; 1952, **41**, 371.

NOTES AND COMMENTS

Lactic Acid–Peroxide Mouthwash.—Dr. A. KRAUS (Twickenham, Middlesex) writes: In the *Journal* of November 4 ("Any Questions?" p. 1237) a reader asks for the formula of a lactic acid–peroxide mouthwash. As he is obviously referring to the mouthwash mentioned in my letter in the *Journal* of July 1 (p. 54), and as such formula has never been published, I am taking the liberty of answering your reader's question. I usually use one teaspoonful of a solution of buffered lactic acid and one teaspoonful of hydrogen peroxide (20 vol.) in half a tumbler of water. The solution of buffered lactic acid is prepared by diluting 100 g. of lactic acid *B.P.* with 100 ml. of tap-water and adding 20 g. of sodium hydroxide. This gives a practically equimolar solution of lactic acid and sodium lactate with a *p*H of about 3.7. However, similar results in the treatment of Vincent's stomatitis can be obtained by using as a mouthwash five times daily a solution of one level teaspoonful of calcium lactate (powder) and one teaspoonful of hydrogen peroxide (20 vol.) in half a tumbler of water.

OUR EXPERT replies: I agree that the questioner was probably referring to Dr. Kraus's letter. In this he pointed out that fluoride inhibits lactic acid fermentation, a physiological process carried out mainly by the oral streptococci, which produces both hydrogen peroxide and lactic acid. Dr. Kraus considered that this was probably a physiological local defence mechanism against infection, and in his letter he stated that lactic acid and peroxide, particularly when applied in the form of a mouthwash, has an almost dramatic effect against Vincent's stomatitis. The second formula he gives was that published in his letter to the *British Dental Journal*.[1] Either of the two formulae he suggests would appear to make a satisfactory mouthwash.

REFERENCE

[1] Kraus, A., *Brit. dent. J.*, 1959, **106**, 192.

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